LETTERS

Continued from page 45

THE LONGEST SNAKE

In 1910, explorer Algot Lange, while traveling in northwest Brazil, shot and killed a 58-foot boa constrictor with a circumference of 5 feet 8 inches.

Lange's account was published in 1911 by the *New York Herald* and included a photograph of the snake. However, there is no measurable object in the picture that would help confirm the snake's length.

Though there were four printed references to this incident at that time, it has not been mentioned again in 70 years.

Gary Mangiacopra
Milford, CT

Although I can't offer evidence of a "record" snake for your fascinating search, nevertheless I can't accept Brian Polsley's "photographic evidence" of the 30-foot python printed in the September 1981 Letters section.

The photo is evidence only that the python is longer than 17 feet. Note that the python extends across the equivalent of 10 men standing shoulder to shoulder. . . . Allowing a generous 1.66-foot width per man, the snake is nowhere near 30 feet in length.

Cdr. K.A. Lee
U.S.S. *Gato*
U.S. Navy

BILLIONS?

You quote Niles Eldredge of the Museum of Natural History as follows: "Our theory is based on the observation that new species seem to appear suddenly and then hang on for five to ten billion years without change. . . ." ["Challenging Darwin" with the main article, "Evolution: Selection for Perfection," December 1981.]

Can you name just one living species that ever hung on for five, let alone ten, *billion* years?

Ernest Franke
Annandale, VA

Our thanks go to Mr. Franke for pointing out our typographical error. Of course, Niles Eldredge, Ph.D. in geology, said "five to ten million *years."–Ed.*

THE CHALLENGE

The pull of gravity on mudskippers is *not* stronger on earth than it is in water [Challenge, November 1981]. Gravity is merely opposed by a buoyant force in water, such that the *net force* experienced is smaller in water.

Dennis Chitwood
Medford, OR

TROBRIAND

Continued from page 105

forage on the shore for shellfish, cook and carry the water, while men fish and hunt, build canoes and make trading expeditions. Men build the framework of houses and women do the thatching. In addition, there is a strict division of possessions in each household. Husband and wife each own and care for their own personal belongings, including clothing. Weiner reports that most marriages are stable, although divorces do occur. The wife returns to the village in which she was born, but the marriage is far from over. Should the woman marry again, however, her new husband must give a gift to her first husband. At this point, her divorce is considered complete.

EXCHANGE RITUALS

Once married, the husband begins to participate in a ritualized exchange of gifts with his wife's lineage. Presents of yams, fish, vegetables, ax blades, shells and necklaces pass back and forth.

Most of a married man's yam harvest goes to others, in a set of complicated ritual exchanges. In return, he receives yams from his wife's family and from his own clan. Fathers and brothers give yams, and husbands receive them. A married man gives most of his yams to his sister's family and receives most of his yams from his wife's clan brothers. In return for what her family gives the husband, a wife receives from him what is known as "women's wealth," skirts, calico cloth and banana-leaf bundles used in mortuary rituals.

Payment and repayment is the focus of Trobriand marriage, a contract not simply between two individuals but rather between two lineages. The relationship ends at death and is marked by the funeral rites, by the widow's or widower's mourning ceremonies and by huge feasts, called *sagali*, presented by the dead man's clan as repayment for the burial services provided by the widow and her family. *Sagali* are undertaken by both the women and the men of the dead man's clan as repayment for those who helped with the burial service or were especially kind to the deceased during life. Men compete to accumulate yams, pigs and valuables to give away; the one who gives away the most gains the most glory. Women, too, compete, making an enormous number of banana-leaf bundles and colorful fiber skirts to be given away.

At these rites, the spirit of the dead man is considered already departed and living its happy afterlife. The funeral is best understood as the conclusion of marriage, the occasion for final settling of accounts between lineages. It is also an opportunity for the living to gain new and greater honors for themselves in the ever continuing cycle of ritual exchange. ■

BRAIN SWAPPING

Continued from page 81

the everyday or even the legal sense of establishing truth. Possibly, according to the pragmatist's test, for hologramic theory works. But as the logician tests truth, my answer is, I hope not.

I am still unwilling to declare hologramic theory *true*. Do I believe the theory? Yes, of course, or I wouldn't be writing about it. But belief has an irrational component built in. And if I correctly judge the reader by my own feelings, there's too much π in the abstract sky for us to move directly from hologramic theory to a description of mind that will ring true to our intuitions. Let's imagine an experiment.

Let's reach into the distant technological future and invent a new holography. Let's invent a hologram of a play, but one whose reconstructed characters are life-size, full color, warm, moving and endowed with "holophonic" sound.

Now let's enter the theater while the play is in progress with the mission of finding out whether the actors are at work or whether they've taken the night off and are letting their holograms carry the show. What test can we use? Suppose we sent a 515-pound gorilla up to the stage. What would live actors do? We could never specifically predict. But there would be a change in their behavior.

What about the holographic images? We can accurately predict their responses with a single word: *nothing!* With the holographer on the job, the show will go on.

What's the theoretical difference between our live players and their holograms? Both depend upon the same basic abstract principle—relative phase. Yet the informational universe in our physical hologram is like a cake that has already been baked. If we want the gorilla in the scene, we must make up our minds about that during construction—before the abstract dough congeals in the theoretical oven. The hologram's coordinate system has already been defined; it is what the philosopher would call *determinate.*

UNDEFINED UNIVERSE

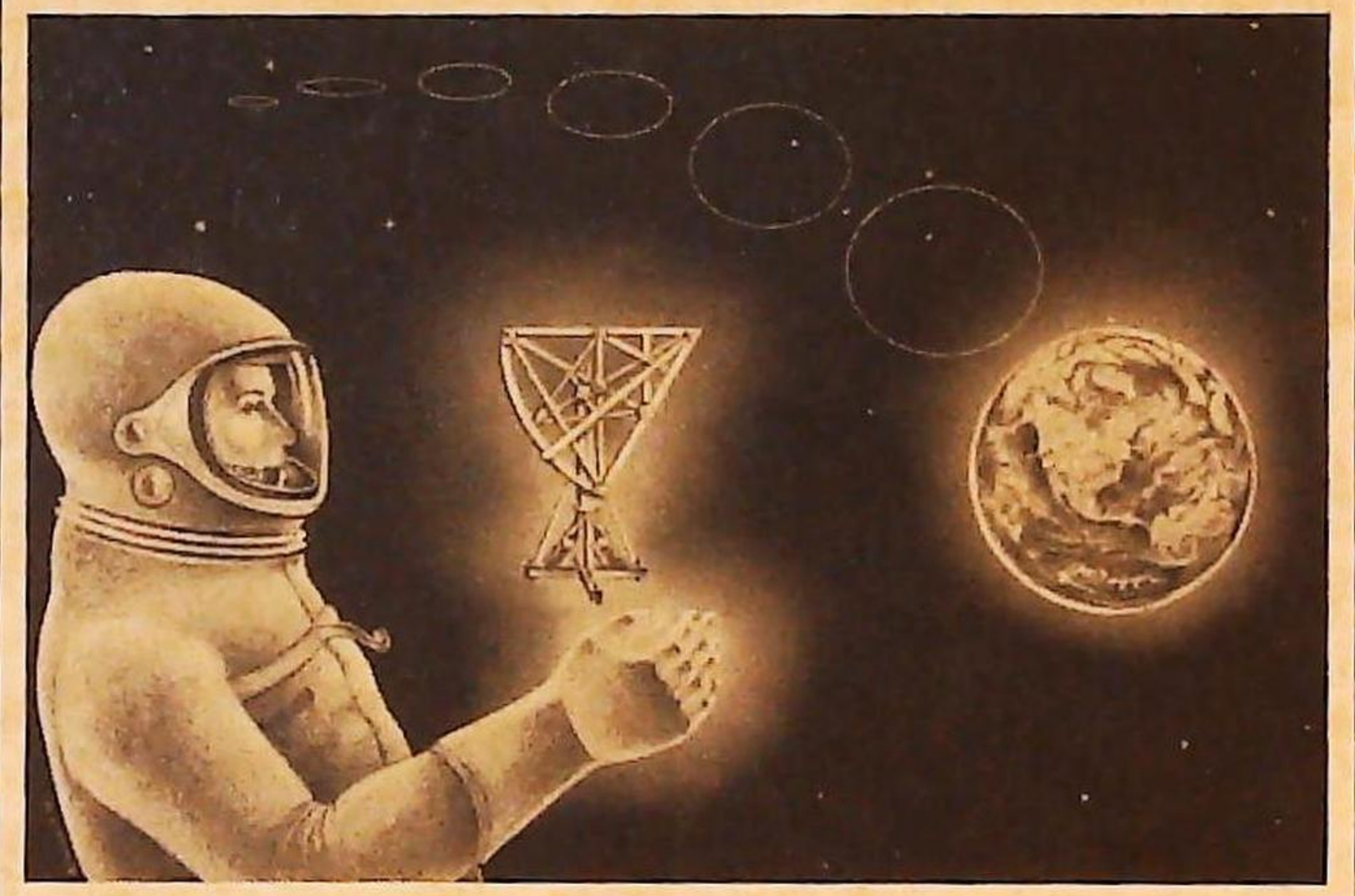
Our live players? Their informational universe is still being calculated; it is still fluid. Their coordinates are not yet defined. Our live actors' minds are continuously *indeterminate.* And it is this *indeterminacy* that *is the principal feature of intelligence!*

Should holographers somehow give holograms continuous indeterminacy, it won't make any difference whether we perceive a particular person or a hologram of him or her—*except* to that person. For then holograms would be as unpredictable as we are. My hunch on this is that it will always make a difference whether we see a person or a holographic reconstruction—but that's pure hunch. ■

COMING IN FUTURE EDITIONS

OF

SCIENCE DIGEST



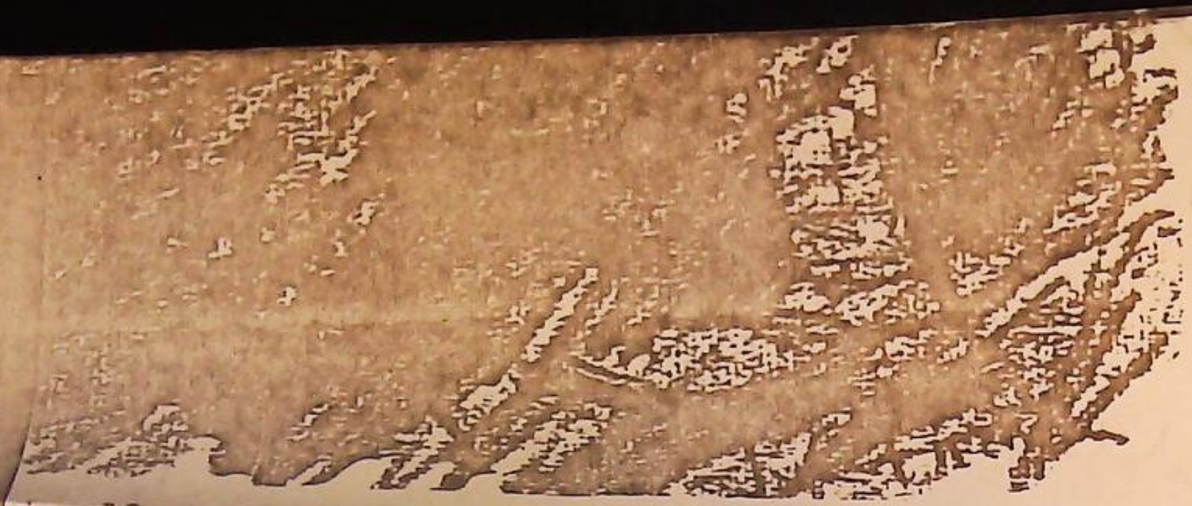
WORLD OF TOMORROW

New Developments: It may have been in these pages that you first learned about the "bacteria tycoons"—private entrepreneurs around the world seeking fortunes in the budding genetic-engineering industry. Some of the developments we forecast in our Winter 1979 Special Edition have already come to pass, including the announcement this January of the manufacture of human interferon, news that was of major interest to scientists and investors alike. We were far ahead of the news reports on this story because of our unique system of gathering the news with reporters who specialize in seeking out noteworthy new developments and bringing you vital information on their social, technological and financial implications. **Mind and Body:** A wealth of data has been gathered by researchers in recent years on the subject of personality traits and illness, and on how personal characteristics relate to resistance and recovery. Writer Dianne Hales has gathered some remarkable case studies from scientists that may force us to rethink our concepts of what sickness is all about. **Diet and Health:** What is there to be learned from the eating habits and health patterns of primitive cultures that we can apply in our own lives? The answer seems to be quite a bit, as our upcoming series of reports makes clear. **Space, New Technology, The Future:** What is it these subjects have in common with astronomy, cosmology, even science fiction? The answer is that all these mind-expanding areas are filled with the excitement of man's discovering his place in the Universe. Each issue will bring fresh coverage of these areas by gifted and creative scientists and writers who want to bring readers the joy of learning. **The Human Family** will seem shocking, even horrifying. But the overall effect, we hope, will be a continuous series of eye-opening insights about what it means to be human and be part of a family. ▶

TEST YOURSELF

The articles in *SCIENCE DIGEST* are based on extraordinary facts and unusual insights. See what you've learned about moon rocks, birds with holes in their heads, or what color calms you. The page number at the end of each question marks the beginning of the story that has the answer.

1. How long would it take man's fastest rocket to fly to the star nearest our solar system? (82)
2. How much water is contained inside your 100 trillion cells? (62)
3. What is a "propaganda substance"? (66)
4. What part of the brain may be the source of your personality? (86)
5. How many volts are there in a bolt of lightning? (38)
6. What percent of couples need sex counseling? (102)
7. Why must birds always swallow fish headfirst? (134)
8. How many hydrogen atoms does it take to span one inch? (42)
9. What are coprolites? (98)
10. What are the only human cells that can propel themselves? (106)
11. What erotic dream do Lepcha women think is essential to life? (50)
12. How can moon rocks tell us the age of the Earth? (82)
13. What percent of the light entering your eye reaches your retina? (42)
14. What is "the giant engine" powering life? (62)
15. What new machine will be able to lift 25 tons of logs at once? (35)
16. How can archeologists tell when an ancient stone ax was made? (98)
17. What is "affectionate cannibalism"? (78)
18. How many stars like the Sun exist in our galaxy? (82)
19. What is the longest snake in South America? (38)
20. When was human sexuality first taught in a medical school? (102)
21. Why do chimpanzees have trouble carrying bananas? (38)
22. Why do small birds have holes all the way through their heads? (36)
23. How far from Earth have 20-year-old Jack Paar shows traveled? (82)
24. What is an exogamous marriage? (50)
25. If a proton were enlarged to the size of a golf ball, how far away would its electrons be? (42)
26. How many cases of leprosy are there each year in the U.S.? (108)
27. How many times smaller than a human egg is a human sperm? (42)
28. Why don't we know the precise age of the Shroud of Turin? (98)
29. In what stage of evolution did man develop compassion? (86)
30. What proves that the Universe began with a Big Bang? (82)
31. What makes a male wasp attempt to mate with an orchid? (66)
32. How was food cooked 3,000 years ago? (98)
33. What animal is completely dependent on slave labor? (66)
34. What organ in the nose may influence sexual behavior? (108)
35. How much blood is pumped through your kidneys each day? (62)
36. What is the key to creating Earth-like conditions on other planets? (128)
37. What is one explanation for the human female's two- to three-day delay in milk production after birth? (78)
38. What is the most common sexual posture, unique to humans? (12)
39. What is an angstrom? (42)
40. How long does it take a fungus to grow a total of half a mile? (34)
41. What color can act as a sedative and even relax muscles? (34)
42. What contraceptive chemical is found in the brain? (109)
43. What organism lives on the bottom of an ant's foot? (66)



the Mesmerism of the Snake.

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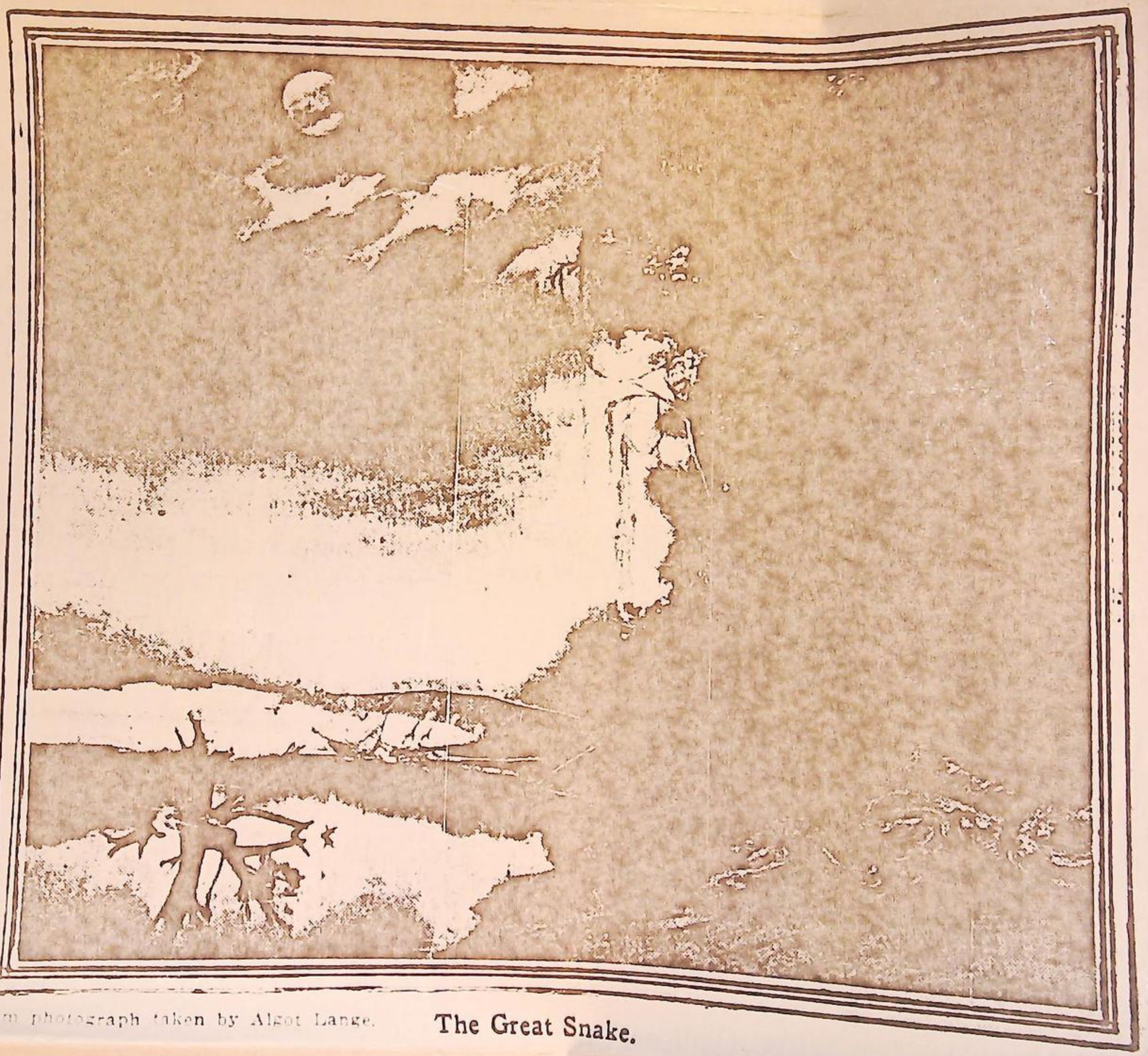
Whereupon my friend the chief rose in his full height and exclaimed in an insulted tone:—"Mister, you say that your people in the North will not believe that we have snakes even larger than this one. That is an insult to us Brazilians. You tell us that in your town New York there are barracoes (huts or houses) that have thirty-five or forty stories on top of each other. How do you expect us to believe such tales?"

I was here in a sad plight, between two realities which existed but were or would be disbelieved in localities so far away from each other.



From photograph taken by Algot Lange. **The Great Snake.**

my automatic Luger pistol and slowly I removed the safety lock, at the same time staring the men in their faces. In this manner I was less under the control of the mesmerism of the snake and could to some extent think and act. I wheeled around while I still had

We brought the skin to headquarters, where I prepared it with arsenical soap and boxed it for later shipment to New York. The skin measured, when packed and fully dried, 58 feet 1½ inches in length and 5 feet 1½ inches in width.

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We brought the skin to headquarters, where I prepared it with arsenical soap and boxed it for later shipment to New York. The skin measured, when packed and fully dried, 58 feet 1½ inches in length and 5 feet 1⅓ inches in width.

BOA 1911 p7 Mogazine section N.Y. Herald

LETTERS

Continued from page 10

To help in your never-ending quest for confirmation of the world's longest snake, I am enclosing a photograph [right]. The snake in question, which I believe was an Indian python, was captured in 1963 on my uncle's plantation in what is now Malaysia. The snake had swallowed my uncle's prize German shepherd (partially visible in foreground).

The snake was measured at 33 feet and was turned into a coat, several handbags and some pairs of shoes.

My uncle claimed that this was not the largest snake he had killed on his property, but the largest ever photographed.

David Medhurst
Toronto, Ontario

The New York Zoological Society's offer of $50,000 for a live 30-foot snake has

The ultimate in personal luxury.

Dodge 400. A driving machine designed and built to satisfy the passion of driving. To bring the thrill of performance to the world of personal luxury.

It's a passion embodied in the extraordinary Dodge 400 Coupe. With front-wheel-drive, rack-and-pinion steering and MacPherson strut front-suspension, it's a driving machine born of engineering excellence

Now there's Dodge 400 Sedan. A driving machine with the same attributes as the coupe. Yet, more traditional enthusiasts will appreciate the fact of 4-doors rather than 2.

And room for 6.

And with an Electronically Controlled 2.2 liter OHC engine, something else separates these remarkable personal driving machines from ordinary personal luxury cars. As both achieve extraordinary mileage.

40 EST HWY 26 EPA EST MPG*

*Use 26 EPA est. mpg for comparison, your mileage may vary depending on speed, weather and trip length. Actual highway mileage will probably be less. CA estimates 36 est. hwy., 24 EPA est. mpg. Convertible mileage less.

LETTERS

CHIMP-HUMAN HYBRID

UNEDUCATED BUSINESSMEN

To the Editors: I recently read your article "Business Without Science" [Viewpoint, July 1981]. As an electronics student, I feel the author is absolutely right about businessmen having insufficient knowledge of science and technology, especially those who are appointed to top positions. I'm not agreeing with this article because I am in a technical field, but because of the true fact that businessmen's lack of scientific knowledge is what's destroying American productivity.

Robert E. Jennings, Jr.
Indianapolis, IN

HOME COMPUTERS

To the Editors: Re: "Home Computers Mean Power" [August 1981]. You don't need a computer to fight a computer. A cool head and common sense are the best weapons. Pacific Bell sent me a bill for $0.00. I sent them a check for the same.

John Pilge
Soquel, CA

To the Editors: G. Harry Stine writes, "Computers do not make errors. . . ." Having worked with on-line medical computers for several years now, I know of a number of conditions under which computers *can* make errors: electrical power malfunctions, high temperatures and high humidity. . . . Computers are not so much my slaves as I am theirs!

D. C. Touret
Fairfax, VA

CHIMP-HUMAN CROSS

To the Editors: I read with interest your article "Ancestors: A Family Album" in the April 1981 issue. . . . It brought to mind a question: Is it at all possible for a human egg to be fertilized by chimp sperm or vice versa?

Paul R. Silveira
Tampa, FL

Physiologist Barbara Durrant, of the Zoological Society in San Diego, CA, replies:

Yes, it is possible that fertilization would take place, but the development of a hybrid animal is very debatable. Human sperm will attach itself to and penetrate the egg of a gibbon but, to my knowledge, a chimp-human cross has not been attempted in the United States. The Chinese claim (in vague, highly suspect reports) to

have used human sperm to inseminate a chimp which then became pregnant, but died before giving birth.

Reputable scientists working on cross-fertilization are not interested in making hybrids; their intent is to study the mechanisms of fertilization.

WORKING IN ORBIT

To the Editors: Your special section "Working in Orbit" [September 1981] really interested me because I am thinking about a space career.

Susan Gibbs
Rocheport, MO

To the Editors: I would like to thank you for the special section on the building of space stations in earth orbit; it was very interesting. If you happen to know if NASA needs any people to help build the stations, could you please contact me; it would be a dream come true. Living on the earth has its moments, but I think I would like to live in space.

Michael Newman
La Habra, CA

ESP

To the Editors: I take angry exception to "The Psychology of ESP" [Human Nature, August 1981]. It dealt neither with psychology nor ESP. It single-mindedly minimized current and past ESP research, which is considerable.

I wonder if author Myers approached the subject of ESP with a truly open mind. . . . It is up to science to take an objective position until all the facts are in.

Anita A. Evangelista
Los Angeles, CA

PLACEBOS

To the Editors: I must differ with the notion in "The Power of the Empty Pill" [September 1981] that coronary bypass surgery probably can be replaced with a sham procedure. I agree that sham surgery may result in subjective postoperative changes but this can in no way resolve an obstruction in a coronary artery.

Dan Garritano, M.D.
Girard, OH

To the Editors: Re: "The Power of the Empty Pill." We live in a placebo world: placebo books, placebo food and placebo pleasures. If doctors plan to treat me with placebo medicine, I intend to pay them with placebo money.

Mark Hoffman
Omaha, NE

BLACK KINGS OF AMERICA

To the Editors: As an Africanist scholar I was pleased and delighted to see the article "Black Kings of Ancient America" [September 1981]. It is long overdue; it is about time that we learn more about the ethnic composition of ancient America.

Clyde-Ahmad Winters
Chicago, IL

To the Editors: May I take this opportunity to express my deep appreciation for the excellent objectivity with which Boyce Rensberger presented my theory.

Ivan Van Sertima
Editor, *Journal of African Civilizations*
Highland Park, NJ

THE LONGEST SNAKE

To the Editors: The longest and heaviest of all snakes is the anaconda of South America. In 1944, one 37.5 feet long and 1,000 pounds was killed on the upper Orinoco River in eastern Colombia.

Marge Cameron
Mt. Morris, MI

Have you seen or heard about the longest snake in the United States or the world? If so, let us know about it.–Ed.

More letters on page 10

LETTERS

Continued from page 9

MERE COINCIDENCE?

In "Mere Coincidence" [January 1982] I came across the word "synchronicity" and its definition given by Jung and Pauli. I don't recall ever coming across this word before or reading about any research done on this phenomenon.

The day after I read this article I was browsing through my local bookstore and decided on a novel called "The Owlsfane Horror" by Duffy Stein. On the page after "Author's Note" there was a definition of synchronicity: "An unexpected parallelism between psychic and physical events"—Jung.

I understand perfectly now what is meant by synchronicity.

Lorraine Pelletier
No. Brunswick, NJ

Readers may find some vicarious interest in my confrontations with the number 79. At the Royal Air Force College, Cranwell, I was in 79 entry, lived on block 79 and the last 3 figures of my service number were 079. I was born on 7th September (which to us British is 7/9 rather than 9/7) and whilst at Cranwell won two consecutive raffles with ticket #79.

Andrew Davies
Banning, CA

Thanks to all the readers who shared their coincidences with us, including Al Kammerer of Omaha, NE, whose life is peopled with other Kammerers; Anthony Klotz of Babylon, NY, and his research into the mathematical coincidences of the New York State Lottery; as well as T.A. Kearns of Bellflower, CA; Pat Cadigan of Overland Park, KS; Ben Donzella of Syracuse, NY; Constance Gates of Trenton, MO; Adrian Benke of San Antonio, TX; and Bart Frank of Jupiter, FL.–Ed.

JAPAN'S TECHNOTRIUMPHS

The problem of reading Chinese characters is not unique to the Japanese ["Made in Japan: TechnoTriumphs," November 1981]. The Chinese also have the problem. Educated Chinese read about 42,000 different characters, of which 22,000 are common. Fortunately, the Chinese on Taiwan have solved the problem. The Multitech Industrial Company makes a terminal called the Dragon Terminal that handles Chinese and English quite nicely. It uses 24 keys for the radicals, or parts, of a Chinese character and takes an average of 5 key strokes per character. I tried it at the last National Computer Conference, and it is remarkably easy to learn.

Ralph M. Lake
Bethesda, MD

BASHFUL BLADDERS

Psychiatrist Steven Gilbert of Georgetown University stated in "Bashful Bladders" [Mind & Body, January 1982] that women do not have the problem "because the way public toilets are built, the problem doesn't arise."

Such an ignorant male chauvinist remark downgrades the caliber of your "scientific" magazine. Please do not throw in just any "professional's" comments for catchy filler material. I am a woman and I've had the problem for years.

C. Harrington

I must disagree with the fact that women do not exhibit delayed and shortened urination in a public toilet. I and many female acquaintances have experienced this problem merely due to the sound of urination, regardless of whether you can actually be observed in the act.

J. G. Richardson
Flint, MI

It's not surprising that men are stricken with bashful bladders in public toilets when they must contend with hidden cameras. If the problem doesn't similarly affect women it may be only because the researchers have not yet installed cameras in the ladies' room, or have they?

I was concerned by the disregard for right of privacy. There are, I believe, laws regarding the informed consent of human experimental subjects.

Kent Mersereau
Plano, TX

PSALMS OF SPACE

I was surprised to read Francis Crick's certainly naive assertion in "Psalms of Space" that poets have failed to be "utterly astonished" by the "scientific revelations" of the "vastness and emptiness of space" ["Seeding the Universe," November 1981]. I don't know to which poets he was referring, but the great poets, such as Dante, Blake and Whitman, have written of little else.

Patrick Henry Dunn
Stevens Point, WI

Dante, Blake and Whitman were indeed moved by the vastness of space. However, our conception of the Universe's dimensions has drastically expanded since the late thirteenth century. The telescope was not invented until nearly 300 years after Dante's death. During Blake's lifetime, the planet Uranus was discovered, and in 1846, when Whitman was 27, Neptune's existence was confirmed. It would be another three-quarters of a century before astronomer Edwin Hubble provided proof that there are other galaxies.–Ed.

CREATIVE FLASHES

I've experienced what you call the Theta state several times, and it's euphoric ["Creative Flashes," December 1981]. I experience these hypnagogic states once every two to six months. I have them just before I fall asleep, but after I've passed the point of being able to make the conscious decision to wake up. I've had two types. The first type simply displays patterns of colors, which I can control! Just as an artist can make wonderful images on canvas, so can I make beautiful kaleidoscopic, geometric patterns in my mind. The other type of experience I've had is to be able to control music, to orchestrate.

Dave McGlumphy
Red Bank, TN

EVOLUTION AND SELECTION

"Evolution: Selection For Perfection" [December 1981] was magnificent and very well written. As a student of science I have heard many views concerning the evolution of man. Your article enhanced my personal views of man's evolution greatly. I feel this article should be read by all who have a doubt as to how man came to be.

Clyde S. White
The College of Charleston
Charleston, SC

SPACE ELEVATORS

While reading the extremely interesting article about space elevators [Update, September 1981], the idea occurred to me that an intermediate step in the development of this technology would be to first run an electrical cable (suitably shielded) from such a satellite to the ground. At the end would be a solar-power satellite transmitting power to Earth.

Del Cain
Readfield, ME

WHERE TIME BEGAN

I want to add to the article "Where Time Began" [December 1981] that Arabs, not Muslims, live by a calendar based on the phases of the moon. We Iranians are Muslim but we keep time by our 365-day 12-month calendar. In our calendar, the first day of the year is the first day of spring, which is March 21 in your calendar. The first six months are 31 days each, followed by five 30-day months. The last month has 29 days, but on leap years the last month will be 30 days long. In Pakistan and Afghanistan, which are also non-Arab Muslim nations, time is kept the same way.

Anousha Shiftch
Royal Oak, MI

LETTERS

There are bacteria, mosses and lichens capable of surviving in the Martian atmosphere. Let's expand life out into the solar system, beginning now.

Clay Elam
Palm Desert, CA

What good does it do to spend years working on something of no use to anyone or anything and which, in the end, could never be proved or disproved? I do see one possible ending to the project: it could contaminate some planet with bacteria that kept reproducing until the planet was knee-deep in bacteria.

Jim Murphy
Elizabeth, CO

LONGEST SNAKE

I believe some of the longest-snake stories are gross exaggerations or miscalculations. With such a controversial subject, one must take into account the reliability of the source and whether the specimen was a live one or only the skin.

I have worked with snakes for over 20 years, and I have never seen any specimen approaching 30 feet. The largest python in my experience was a 22-foot reticulated python in captivity. According to my research, the record is 32 feet for a retic and 34 feet for an anaconda. The largest recorded nonvenomous North American snake is the Eastern indigo at 103.5 inches, and the longest venomous snake is the Eastern diamondback, at 96 inches. These records are based on live specimens turned over to reliable scientific centers.

Larry Cartmill
Herpetologist
Barboursville, WV

Look for the grand finale of the amazing facts about the longest snake in our May issue.–Ed.

MALE NIPPLES

The question by the male reader who asked, "Why do I have breasts?" was not properly answered by your Everyday Science item "Why Do Men Have Nipples?" [January 1982]. The fact that male nipples are a holdover from the hermaphroditic potential of the fetus does not mean they have no biological raison d'être. You seem to have missed the fact that they are highly efficient erogenous zones.

An organ which promotes mating is of obvious evolutionary value to a species. Nor should we be shocked at the concept of a body part dedicated uniquely to erotic purposes if we consider animal scent glands, mating dances or the clitoris.

Michel Cléroux
Ottawa, Ontario

INFORMATION DISEASE

As a new subscriber, I feel that I must, first, commend you for printing a fine article on a controversial subject ["Information Disease," January 1982], and second, take exception with the authors' basic conclusion: all cults are bad. As a member of a group mentioned in the article, I have yet to experience the anxiety, loss of memory or creative suffocation which, unfortunately, some people do experience. Through meditation, I have increased energy which I use to memorize facts for a test and write songs. People who feel all cults are bad should examine the bloodiest cult of all—Christianity.

Martin Aaronson
Houston, TX

What makes the mainstream religions any better than the cults? Both prey upon our anxiety, arising from the possibility that our state of being after death may be as it was prior to birth: nothingness.

D. J. Nerren
Springfield, MO

A noxious piece of modern witch-hunting.

Tom Tortorici
Port Richey, FL

Do the writers suggest that there is something more "diseased" about the information being peddled by the Moon organization than in the information being hawked on prime-time TV by the makers of Klein, Jordache, and so on?

A. H. Jessup
Wilton, CT

No mention was made of the "intelligence" cults in America. These are the atheist cults that brainwash individuals with the idea that those associated are of superior intelligence. My mother, Madalyn Murray O'Hair, leads one such cult in Austin, Texas, called American Atheists. My mind was nearly lost to her dogma. The mind of my brother and one daughter have been lost to her beliefs.

William J. Murray
President
Faith Foundation, Inc.
Houston, TX

Madalyn Murray's campaign against prayer in the public schools led to the Supreme Court's 1963 decision in Murray v. *Curlett that laws requiring such prayer were unconstitutional.–Ed.*

Prior to Scientology I was a floundering phone solicitor disillusioned with life and lacking goals. Today I am a proud husband and father, half-owner of a multimillion dollar business, Mensa member and active in a number of new pursuits. I have no physiological problems nor do I have feelings of fear, guilt, hostility, depression or sexual dysfunction.

The Conway-Siegelman article presented grossly distorted views, since they analyzed only responses from ex-members. They might be greatly surprised if they sent the same questionnaire to ex-Catholics, ex-Jews, ex-Moslems or, for a real horror story, ex-Marines.

Greg Gordon
Copley, OH

The sampling methods used by Conway and Siegelman were not only lacking in even the most primitive scientific design, they were obviously designed to sample only that body of opinion which was bound to support their ideas.

Lee Coleman
Psychiatrist
Berkeley, CA

ASTRONOMICAL GUIDE

I urge you to run a series of articles teaching people how to *observe* the sky and where to look to see, for example, Venus. Have an artist draw maps of *small* sections of the sky.

I have three university degrees and about all I know how to find is Orion!

Susan Nelson
Columbus, OH

The only reason people treat astronomy with a passing interest is that they feel real work is needed to understand anything about space. Give the rookies a chance to see if it gets in their blood. Let's see an astronomical guide!

Chris Mackintosh
Melfort, Saskatchewan

You've won! The overwhelming response of our readers has convinced us to begin an astronomy column. Look for this new monthly feature, written by a well-known astronomer, to appear in an upcoming issue.—Ed.

ELECTRIC CARS

Presumably your report on "Electric Cars at the Crossroads" [February 1982] was not intended as the definitive piece on this technology. I expected that you might have seen fit to mention that there is, in fact, a trade association for on-road electric vehicles.

John S. Makulowich
Executive Director
Electric Vehicle Council
1111 19th Street, N.W.
Washington, DC

Continued on page 10

LETTERS

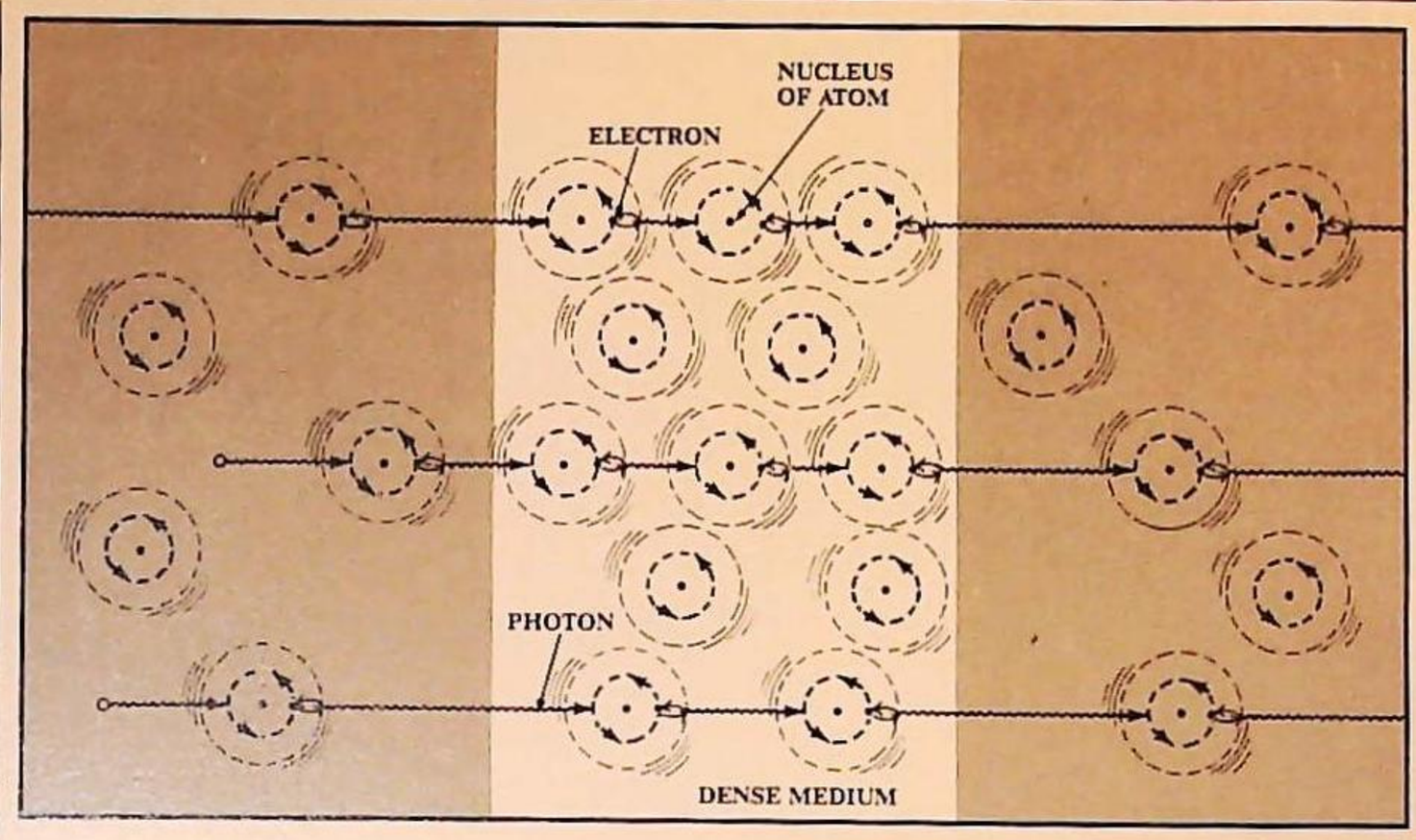
DOES LIGHT SLOW DOWN?

I would like to join the discussion of "How Heat Produces Mirages" [Letters, October 1981].

You explain that light traveling through a dense medium excites the molecules therein, causing them to radiate light energy. The time lag involved in the molecules being excited and emitting a new photon effectively slows down the entire wave packet.

If this is the case, then what accounts for the strange phenomenon of the beam of light resuming its original speed after leaving the medium through which it has traveled?

Mark D. Robinson
Vancouver, British Columbia



The Newscience staff replies:
In modern quantum mechanics, light is thought to be composed of particles called photons that always *travel at the speed of light in a vacuum.*

When a photon strikes an atom, it is absorbed, causing one of the atom's electrons to jump to an unstable higher orbit, or energy level. When the electron falls back to its original, more stable orbit, a new photon is emitted—also traveling at the speed of light. In a dense medium (center section, diagram above), a photon is likely to strike more atoms—causing more delays—than in a sparse medium. Thus, a beam of light takes longer to travel through, although its photons travel at the speed of light. When it emerges, the photons face fewer delays.

CULTS INVESTIGATED

The best thing to be said for cults is that they have saved some youngsters from a life of drugs and provided them with an extended family. ["Information Disease," January 1982]. The worst thing that can be said about cults is that they are infecting a large number of impressionable youths who might otherwise be making real contributions to our society. It is certainly true that most "older, organized religions" don't require absolute subservience.

Michael M. Rosenblatt, DPM
Seattle, WA

I have been a member of the Hare Krishna movement for 11 years. Imagine my surprise upon discovering that for all this time I have been "mentally ill," according to the authors. I state proudly, defiantly, *dissidently*—I prefer my "insanity" of Krishna consciousness to the "sanity" of twentieth-century society.

R.T. Crowley
West Germany

The authors made a serious error in stating that brainwashing "rests firmly on the principle fear of physical coercion." In fact, what is sometimes most startling is the *total* lack of torture or physical abuse.

I have lectured on brainwashing and can see that a detailed comparison of it with coercion would reveal parallels.

Conway and Siegelman say that in cults, control is gained by "information." William E. Mayer, whom I consider the authority on this subject, states that brainwashing is an "attempt to distort men's attitudes . . . and to supply them with a mass of specific information."

Lt. Guy A. Smith, Jr.
USN Retired
Brookneal, VA

A brilliant article. Unfortunately, it did not go far enough. Why are cults growing "larger, richer and more powerful"? Who are those who join cults? How do people become sucked in so quickly? Conway and Siegelman must write a sequel.

Heidi Copeland
Peterborough, NH

COMPUTERS DEFENDED

As president of a growing computer software company, I was aghast at Alex Fleming's defamatory letter concerning home computers [January 1982]. I have no argument with his opinion about improving our "head computers" [our brains], but he has an abrupt shock coming if he doesn't realize the difference between a TRS-80 and a Pac-Man.

If Mr. Fleming still holds his grudge against an innocent PET computer, tell him to take a trip to the nearest hardware store and memorize all 500 names on the computer mailing list.

Jeff Borrusch, President
Advanced Technologies Communications
Matthews, NC

SUPERCHICKEN

Having raised chickens for 20 of my 25 years, I read with interest "Superchicken" [February 1982]. I must correct you on two points. First, practically all chickens have four toes, not five as pictured on your centerfold. Second, you claim chickens aren't quite as dumb as turkeys, which stand up to lay their eggs. Admittedly, chickens aren't too well blessed with smarts, but they too stand up while laying.

Hatching is an interesting ordeal. The chick starts by pecking a hole in the shell with its beak. The beak's tip is covered by a small pointed cap, which facilitates hatching and falls off several days later. Shortly before hatching, the chick absorbs the remainder of the yolk and can go 72 hours without food.

John Kirchhoff
Renick, MO

Your article "Superchicken" was the most morbid thing I have ever read. It proved how the chicken suffers in life as well as death.

Lee Cullen
Kenosha, Wis.

EINSTEIN ON RELIGION

All those letters on "The Genesis War" [October 1981] and not one that quoted Einstein. Please allow me. "But science can only be created by those who are thoroughly imbued with the aspiration toward truth and understanding. This source of feeling, however, springs from the sphere of religion . . . . The situation may be expressed by an image: science without religion is lame, religion without science is blind."

Katherine Stahl
Port Sanilac, MI

More letters on page 115

Illustration by Howard S. Friedman

never been claimed because snakes over 30 feet are extraordinarily rare, if they exist at all. A 20-foot anaconda is considered a giant; a 23-foot reticulated python is regarded as enormous. The title of largest North American snake goes to the harmless indigo snake at a length of 8 feet, 7.5 inches.

The Society's original offer, made by Teddy Roosevelt around 1910, was only $1,000. In the 1970s it was raised to $15,000 and, in 1979, to $50,000.

John L. Behler
Curator, Department of Herpetology
New York Zoological Society
Bronx, NY

When we first asked for any information about the world's longest snake, over a year ago, we never expected the flood of letters that still pours in. The claims we have published range from a monstrous 131-foot, 5-ton anaconda in Brazil to a photo of a python purportedly 30 feet in length. We thank the numerous readers who wrote. We are hereon turning over all letters, photographs and documents to the New York Zoological Society for its records. But don't give up the search: the Society's offer of $50,000 for delivery of a live snake over 30 feet long to the Bronx Zoo still stands.–Ed.

BOGUS SCIENCE?

Martin Gardner's reply to my review of his book ["Letters," April 1982] compounds his error. His belief that it is the fringe scientist who causes society's problems is wide of the mark. All too often it is the establishment (to whom he accords such respect) that makes foolish and dangerous decisions. The corporate scientific community in which he puts his faith does not deserve it.

I will not here analyze his several misstatements—including his comments on Leeuwenhoek—but I must correct one aspect of the overexuberant editing of my article on Leeuwenhoek's specimens ["The Lost Treasure of Anton van Leeuwenhoek," March 1982]. His name is not Anton but Antony. I am aware that the U.S. reference works go for the shorter version, but it is an invention that is long overdue to be corrected.

Finally, the method for making and observing with a model single-lens scope, which Oldendorf and Zabielski published in the same issue, will not work. I will send a copy of my original Royal Society paper on the Leeuwenhoek specimens to the first *Science Digest* readers who correctly identify the error.

Brian J. Ford
Cardiff, Wales

Continued

Machines. The Dodge 400's.

LETTERS

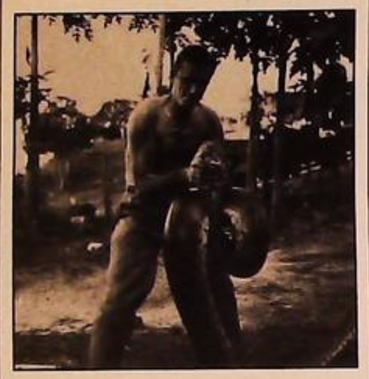
Continued from page 8

THE LONGEST SNAKE

To the Editors: Some 25 years ago, I traveled the Amazon River from the Atlantic to the headwaters. During this geological expedition, I saw several skins of anacondas that measured over 45 feet, and a few living specimens that measured only a few feet less.

Here is a photograph of myself and an anaconda taken at that time.

Brian J. Pejovic
Geneva, Switzerland



To the Editors: In 1910, I saw "the big snake." Behind our house in Oklahoma was a creek 15 feet wide. The trees on opposite banks had branches that touched each other 16 feet above the water.

I was with four other kids when I saw the snake crossing the creek through the treetops; its head was on the ground on the opposite bank but its tail was still on the ground on our side. It was brownish, like a bull snake.

Before Lewis and Clark made their trek to the northwest, an exploration was made through the Oklahoma area, and the journal of that trip notes that they encountered "monsterous snakes."

Addie Lehue
London, TX

Our thanks to Ron Meisenheiner, San Francisco, California, and Andrius Gerulis, Chicago, Illinois, for taking the time to send documents about some of the longest snakes in the world.–Ed.

INNOVATION CENTERS

To the Editors: Being an inventor and entrepreneur of business, I was particularly happy to read the article in your August 1981 issue titled "Making Bright Ideas Pay Off." My compliments on a fine, informative and concise article.

Steven L. Andersen
Tacoma, WA

To the Editors: We at the Wisconsin Innovation Service Center appreciate your article on innovation centers and how they can help inventors to bridge the gap between the development of an idea and its possible commercialization.

David H. Stong
Whitewater, WI

THE CANNING OF AFRICA

To the Editors: Re: "The Canning of Africa" [August 1981]. Don't crop the Serengeti herds, crop elephants! Being efficient bulldozers of forests and woodlands, they not only end up depriving their own kind of food, but they also help to wipe out the many woodland-dependent species.

Tumaini Y. Mcharo, Ph.D.
Former Director, Serengeti Research Institute of Tanzania National Parks
Kansas City, MO

AMAZING CAVE ART

To the Editors: Re: "Amazing Art of the Cave Dwellers" [June 1981]. The author concludes that the function/meaning of the art is unclear. Our theory for Paleolithic art says that its function was that of trophyism, i.e., that the depictions represent the large, rare or dangerous prey of these great hunters—their trophies.

Randall L. Eaton, Ph.D.
Editor, *Carnivore* journal
Ashland, OR

HAIRY WILD MEN

To the Editors: Your article "Hairy Wild Men of China" [August 1981] was magnificent and indeed well written. I want to add that hirsute individuals grow up to be normal humans in physical size and mental ability.

Ralph Tjoa
Redlands, CA

To the Editors: In reference to the short piece, "Furry vs. Smooth" [with "Hairy Wild Men of China"], I beg to differ. Apes did not lose their hair as they evolved into hunters under a tropical sun on the savannas of Africa, or by selective choice of less hairy mates.

Apes became hairless by the same process virtually every other hairless mammal did, by living in water for a few hundred thousand years. There is much evidence to support this theory. For example, if we did not evolve from the sea, we would be the only land-evolved animal to have tear ducts. Our erect postures, our subcutaneous layer of fat, and even the pale skin of some members of our species indicate that we are linked much more closely to an aquatic prehistory.

David Gillman
Dollard des Ormeaux, Quebec

FIRE AND ICE

To the Editors: In "Fire and Ice" [June 1981], Isaac Asimov claims that the earth's rotational energy converts into heat. This makes sense, but I had trouble understanding why "what the Earth loses, the moon gains." Can you explain what this means?

M. L. Rollinger
St. Joseph, MI

Isaac Asimov replies:

Earth's rotation involves two properties: rotational energy and angular momentum. As Earth slows up, energy stays energy but may change its form; momentum stays momentum but may change its form. Rotational energy turns into heat, which is another form of energy. The angular momentum of rotation, however, turns into the angular momentum of the moon's revolution. Thus, as the earth slows, the earth gains heat, while the moon gains momentum and drifts farther outward in order to do so.

UNIFON

To the Editors: All hail "The New Age of Reason" [August 1981]! This is so simple and practical, I am amazed it isn't our alphabet yet! The article seems to have started a fervor in my neighborhood. A friend of mine who has dyslexia has not stopped inquiring about it since reading the article. Is there any way the public can keep abreast of the push for alphabetical order?

John Wilson
Phoenix, AZ

To the Editors: All I want to know is, when does "The New Age of Reason" take effect? I can hardly wait to start.

Randy Scott
Odessa, TX

To the Editors: The declining richness of the English language would be accelerated if the trend of simplification is not checked. What would be the tools of future poets? Is UNIFON yet another sign that science will eradicate art?

Bobby Ross
Saudi Arabia

SPACE PROGRAM

To the Editors: Planetary probes which have expanded our knowledge of the solar system represent the reason we deserve to survive: our desire to learn.

Suzanne Bolser
Winfield, IL

Please send your letters to: Editor, Science Digest, *888 Seventh Ave., NY, NY 10106.*

COINCIDENCES?

Continued from page 85

owed some current speculations in quantum physics, "We thus arrive at the image of a world-mosaic . . . which, in spite of constant shufflings and rearrangements, also takes care of bringing like and like together."

Jung eventually collaborated with Nobel physicist Wolfgang Pauli in developing a theory of coincidences that they called *synchronicity.* Pauli was attracted to the subject because he himself was haunted by malign coincidences that his fellow physicists jokingly called "the Pauli effect." As a theoretical, as distinguished from an experimental, physicist, Pauli did not spend much time in laboratories. It happened however that—more often than mere chance could explain—when Pauli was in a laboratory something exploded or broken. It was not that he caused these accidents usually happened many yards away from him.

TWO CONNECTIONS

What Jung and Pauli suggested was that there are two kinds of connecting principles in nature. The first connecting principle is ordinary causality, which is what science usually studies. Causality is structured linearly in time: if A causes B, then A must occur in time before B. The other connecting principle is acausal, as Kammerer believed (though neither Jung nor Pauli appear to have read his book). The ACOP (acausal coincidental principle) Jung and Pauli called synchronicity because they assumed it was at right angles to causality and structured in space, not time. That is, the synchronicities (from the Greek, *syn,* together, and *chronos,* time) happen at the same time.

The relation between synchronous events, according to Jung, is basically psychological. The logic, in other words, is the logic of the deep psyche, which Jung (and Freud) had found in dreams and myths.

Barbara Honegger, a leading student of these matters, has pointed out a basic defect in the Jung-Pauli theory. ACOPs are by no means only synchronous. They are often separated by days or even years.

A new light was shed on ACOPs in 1964 by the Scots physicist John Bell. Bell's theorem holds that if quantum physics is accurate, particles that were once in contact continue to influence one another, no matter how far apart they move. This influence is instantaneous, according to Bell, even if the particles are at opposite ends of the Universe.

This makes a nasty problem for physicists because Bell's conclusion directly contradicts Einstein's special relativity, which holds that any influence between particles must require an energy transfer, and energy cannot move instantaneously. Energy only moves at the speed of light or less. Bell's theorem provides a possible mechanism at the quantum level for the acausal interaction of apparently unrelated events. Whether it can be applied beyond the strange world of subatomic particles is a question so far without a firm answer.

Four experiments have confirmed Bell's math; two have cast doubt on it; research is continuing. Meanwhile, some physicists have started reflecting on how to reconcile Bell with Einstein, if both are right. Dr. Evan Harris Walker has suggested that the "influence" in the Bell connection does not involve energy and hence does not contradict Einstein. The influence, Walker proposes, is consciousness itself.

Dr. Jack Sarfatti offers a different interpretation. The medium of the Bell interconnectedness, he says, is not consciousness but information. Now, information is very abstract in communication theory: it is the negative reciprocal of entropy, which means roughly that it is the opposite of disorder. It is almost what we call system or organization in daily speech. Information, Sarfatti proposes, is not bound by the same laws as energy and

> The uncanny may be just a way that our brain's right hemisphere tries to capture our left hemisphere's attention.

not subject to Einsteinian limits.

This would explain a great many of the ACOPs collected by Jung, Kammerer, Koestler and others; it might even explain the Hardy-Harvie experiment, in which randomizing led to more order rather than more disorder. And it throws all of the data of parapsychology into a new perspective: instead of separate paranormal abilities such as ESP, precognition and telekinesis, there might just be one ACOP—acausal coincidental principle—appearing to us in many forms to which we give those names.

Another angle on the problem comes from Dr. David Bohm's hidden-variable theory, developed from some ideas of Einstein's. According to Bohm, below the quantum level (this is a metaphor) there is a subquantum world of hidden variables. This is not below in the ordinary sense but in a logical sense. What Bohm means is that the space-time world observed in physics is an epiphenomenon, a phenomenon caused by another phenomenon; underlying it is a spaceless, timeless realm from which the events of ordinary reality emerge. Bohm uses this theory to explain, or transcend, the notorious indeterminacy of the quantum realm (where ordinary causality breaks down), but it could also explain the acausal coincidences we are discussing.

Whether we take Bell's interpretation of quantum mechanics or Bohm's, we seem to arrive at a world in which all things are very intimately connected, no matter how far apart and seemingly unconnected they may appear in ordinary space and ordinary time. This may sound like Buddhism or other mystic teachings, but other quantum theorists have come to similar conclusions by other avenues. Nobel laureate Erwin Schrödinger decided, as early as 1945, that the only sane explanation of quantum wave mechanics was that "The mind . . . is something we simply cannot conceive of as plural."

Barbara Honegger has a model that united all these approaches with current neurology. The brain, in a general way, has two hemispheres. The left hemisphere seemingly does all the talking (except in dreams and schizophrenia); it is the seat of the conscious ego. The right hemisphere is often called the silent hemisphere because it talks much less. It is also very active in hypoexcitation (deep yogic trance), in hyperexcitation (LSD trips, wild dancing, etc.) and while listening to music.

Honegger believes that the right hemisphere ego consciousness is continually trying to assert its existence and communicate with the left hemisphere ego, which Western adults think is their only ego. The right-side ego usually communicates via dreams, as noted by Freud and Jung, but if the left-sided ego remains deaf to these messages, the right hemisphere creates Freudian slips or hysterical symptoms to get the ego's attention. And, if nothing else works, it produces an ACOP. It does this, Honegger suggests, by means of connecting principles such as those suggested by Bell and Bohm. According to Honegger, we should analyze such ACOPs the way Freud and Jung analyzed dreams to see what unconscious messages they contain.

SPACE-TIME UNLIMITED

The uncanny, then, is just the right hemisphere's way of violently capturing our attention.

Of course, recent evidence suggests that the right brain-left brain dichotomy is not as absolute as once believed; Honegger's model is only the latest, not the last, word on this subject. But the growing convergence of data from coincidence hunters and the latest theories in quantum physics suggest that the model that will tie all this together will be much more revolutionary than proof of ghosts or of UFOs or even of thought transference would be. We seem to be dealing with a force that is, as Kammerer said, as universal as gravity and without limitations in either space or time. ■

LETTERS

Continued from page 12

BLACK KINGS

"Black Kings of Ancient America" contains a statement by anthropologist Michael Coe: "I don't think they [the huge Olmec stone heads] look at all African" [September 1981]. Mr. Coe should take a refresher course on the physiological traits of each human group to understand which is the prototype for broad noses, thick lips and tightly curled hair. Apparently, he and other detractors never actually took the time to view the stone statues displayed in Van Sertima's book *They Came Before Columbus* [see below].

George Kilpatrick
Port Chester, NY

It is very encouraging to finally read something in a science journal about the true facts of ancient black civilizations and their astonishing achievements—even though since I was a child I was led to believe we black people only pierced our noses with bones, cooked each other and any missionaries and followed Tarzan through the jungles of Africa. But thousands of years of advanced black civilization are too much to be kept hidden for too long.

Bill Finley
Chicago, IL

UNIFON

Hurray for the UNIFON alphabet ["The New Age of Reason," August 1981]. But unless it can be written easily, it won't be accepted. . . .UNIFON needs a cursive form and a lowercase; all capitals are for computers, not for people. [Written in UNIFON.]

Gerald L. Wiberg
Lakewood, CO

Author John Culkin replies:

There are experimental sets of both lowercase and cursive letters for UNIFON, but I stressed uppercase letters for basic explanatory purposes.

I received hundreds of letters from Science Digest *readers on UNIFON, and my follow-up article will describe many new ramifications.*

MALE BREASTS

Why are you dodging my questions? I keep writing you asking, "Why do I have breasts?" Knowing nature is never wasteful, breasts on human males *must* have had a significant function in the past, or will have in the future. Answer me, or I will stop buying the magazine!

Jerry Wagner
Mikado, MI

See a Newscience article on page 104 for the answer.–Ed.

SENILITY VIRUS

"The Senility Virus" raises important issues that require clarification [August 1981]. While it is true that a very unusual virus is probably responsible for the very rare disorders Creutzfeldt-Jakob disease and kuru, the evidence for the presence of any such agent in the brains or other tissues of patients with Alzheimer's disease is almost nonexistent. There is no evidence whatever to indicate that Alzheimer's disease can be transmitted from person to person. We can see no reason for families or the medical personnel dealing with Alzheimer's disease to be afraid of catching the disease.

Peter Davies, Ph.D.
Robert D. Terry, M.D.
Albert Einstein College of Medicine
Bronx, NY

HOME COMPUTERS

Re "Home Computers Mean Power" in your August 1981 issue: I think the use of these toys has gone far enough. Why not try to improve the logic and mental functions of the computer in our heads?

Alex Fleming
Barnet, England

SPACE PROGRAM

I support an expanded space program. Technology is ours for the taking; I suggest we take it.

James Joseph Pecora
Pittsburgh, PA

MAKING BABIES IN SPACE

Concerning "Making Babies in Space," it would appear to be at best a moot point [Mind & Body, October 1981]. Anyone with the technology to live in space for extended periods of time would also be advanced enough to employ cloning and other such methods of reproduction.

Frederick M. Hartley
Newton Falls, OH

MAKING THE TEAM

The author of "Making the Team" has committed a gross error [September 1981]. The first woman in space will not be an American. A Russian, Valentina Tereshkova, was the first woman in space. She orbited the earth for almost three days from June 16 to 18 in 1963.

Eric Weinberg
White Plains, NY

Alcestis Oberg replies:

When I spoke of the first woman, I meant the first American woman, since the article deals exclusively with the American space program.

Since that one 1963 flight, the Russians have not used a female astronaut (although four were trained along with Tereshkova) and, to the best of my knowledge, they do not plan to use one in the near future. On the other hand, the American woman astronauts currently in training can anticipate true space ca[reers].

PIPING SUNLIGHT

The concept presented in "Piping Sunlight" [that is, using solar collectors and special fiber-optic cloth to illuminate interior rooms with sunlight] has excited me tremendously because I can foresee a number of potentially useful applications for the idea [Technology, August 1981].

Terry Lewis
Waynesville, MO

BRONTOSAURUS HEADS

Since I have a model of the Brontosaurus skeleton [with the old head], made some years ago by the Ideal Toy Corporation, don't you agree it would be quite sporting of Ideal Toy to "tool up," make new heads and recall the old ones? All for free, of course!

Seriously, I enjoyed the article ["Dinosaur Renaissance," August 1981].

Nyal M. Brown
Paw Paw, MI

HIDDEN FORCE

Just when we think we're beginning to understand the intricacies of biochemical coding, Dr. Rupert Sheldrake comes along to turn the pyramid of scientific truth on its head once again ["Rupert Sheldrake's Hidden Force," October 1981]. The implications of morphogenic fields for evolutionary theory are obvious; their impact on our vision of life itself is staggering.

Tom Tortorici
Port Richey, FL

More letters on page 105

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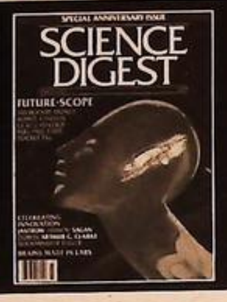
LETTERS

ENDANGERED CHILDREN

To the Editor: Under most divorce laws, child custody rulings place children in exactly the situation of the infant langurs [who were killed by unrelated males] in Sarah Hrdy's book *The Woman That Never Evolved* ["Sexual Choice," March 1982].

Files of the Men's Rights Association (MRA) are filled with cases of child abuse by stepparents—usually, but not always, male—and single mothers' boyfriends. A study by MRA's Ken Pangborn shows child abuse to be 37 percent higher among single mothers than among the general population and that 67 percent of all child abuse is committed by women.



David C. Morrow, Editor
Men International
Arlington, TX

SCIENCE CORPS

Isaac Asimov is right ["The Science Corps Wants You," Viewpoint, February 1982]. And the science corps needs us as much as we need it. How does one begin? The Piedmont Advocacy for Space was created in 1981 to promote the space program in South Carolina. It provides programs and seminars and works with students to discover career information.

We must have a space program "by the people and for the people." I want Dr. Asimov to know that his idea has already been put into practice.

Ramona McGill
Starr, SC

Not only has Dr. Asimov recognized a major problem, he has set down some realistic solutions. I was lucky to be introduced to science by a wonderful teacher who believed that science should be a field of wonder and exploration. It's too bad that all children aren't given such good starts.

Meredith Lavring
Minneapolis, MN

Asimov's science corps isn't likely to produce much of an increase in scientists in this country. Only *jobs* can provide that increase.

One of my brothers earned a B.S. in physics. Could he get a job with that? No. There were few, if any, jobs available in physics then, and none for people with just a B.S. So he earns his living as a handyman and roof repairer. He's also back in school learning how to repair hospital equipment.

Another of my brothers has a degree in meteorology. Could he get a job in that field? No—too few available. So he earns his living selling things at swap meets and car shows.

For this country to gain more scientists, there will have to be more jobs for scientists.

Camille Holser
Oakland, CA

The Scientific Manpower Commission in Washington, D.C., in their report published in early 1982 entitled "Supply and Demand for Scientists and Engineers" offers these projections on employment in the scientific and technical fields. Between 1978 and 1990, the ratio of degrees in science and engineering to job openings in those fields will be, overall, almost three to one (this includes bachelor's and master's degrees). The greatest need will be for computer scientists, with three times as many job openings available as students with degrees.–Ed.

Bravo for Isaac Asimov. Does such an organization exist? If so, sign me up!

John Fleming
High-school student
Las Vegas, NV

DOG ROOTS

As Professor Francois-Xavier Kirby points out, ["Letters," April 1982] prehistoric humans and early wolflike animals in western Europe would both have been drawn to the shelter of caves, perhaps leading to the eventual domestication of the dog. However, it should be noted that some of the earliest dog finds are reported from late Ice Age sites in the Russian Ukraine that were open-air settlements of houses built from skin and mammoth bones, far away from the caves.

As I suggested in my book *Secrets of the Ice Age,* Australian aborigines raised wild dingoes as pets for amusement during the last century, perhaps offering a clue to the early stages of the dog-human relationship. The dingoes were actively captured but only as a pastime, since they were relatively ineffective for hunting. Some pups were treated casually and soon deserted the humans in favor of better feeding in the wild. Others were given names, fed regularly, and were even suckled by the women.

Evan Hadingham
Cambridge, MA

THE "LONGEST SNAKE" FINALE

In the eighth century, Ioannes Damascenus wrote this about the work of the Roman historian Dio Cassius (A.D. 150 to 235): "Dio the Roman . . . says that when Regulus, the Roman consul, was warring against Carthage, a serpent suddenly crept out of the palisade of the Roman army and lay there. By his command the Romans slew the reptile and, having flayed it, sent its skin, a great wonder, to the Senate at Rome. And when measured by this same Senate, as Dio himself goes on to report, it was found to have a length of 124 *pes* [120 feet; the Roman foot, or *pes*, was 11.62 inches]; its thickness, moreover, was proportionate to its length."

Terrell E. Stewart
Columbus, GA

In *Snakes in Fact and Fiction,* Dr. James A. Oliver lists three actual measurements of very large anacondas. Rodolfo von Ihring reported one that was 11 meters, 28 centimeters (37 feet) long. Roberto Lamon, a petroleum geologist, measured one 37.5 feet long. And General Mariano de Silva Rondon, of the Brazilian army, measured one over 38 feet.

Paul Hollander
Ames, IA

As a linguist working with jungle tribes in Bolivia in the late 1950s, I remember hearing a Guarayo Indian from the village of Yaguaru tell of seeing an anaconda "nearly 35 meters long."

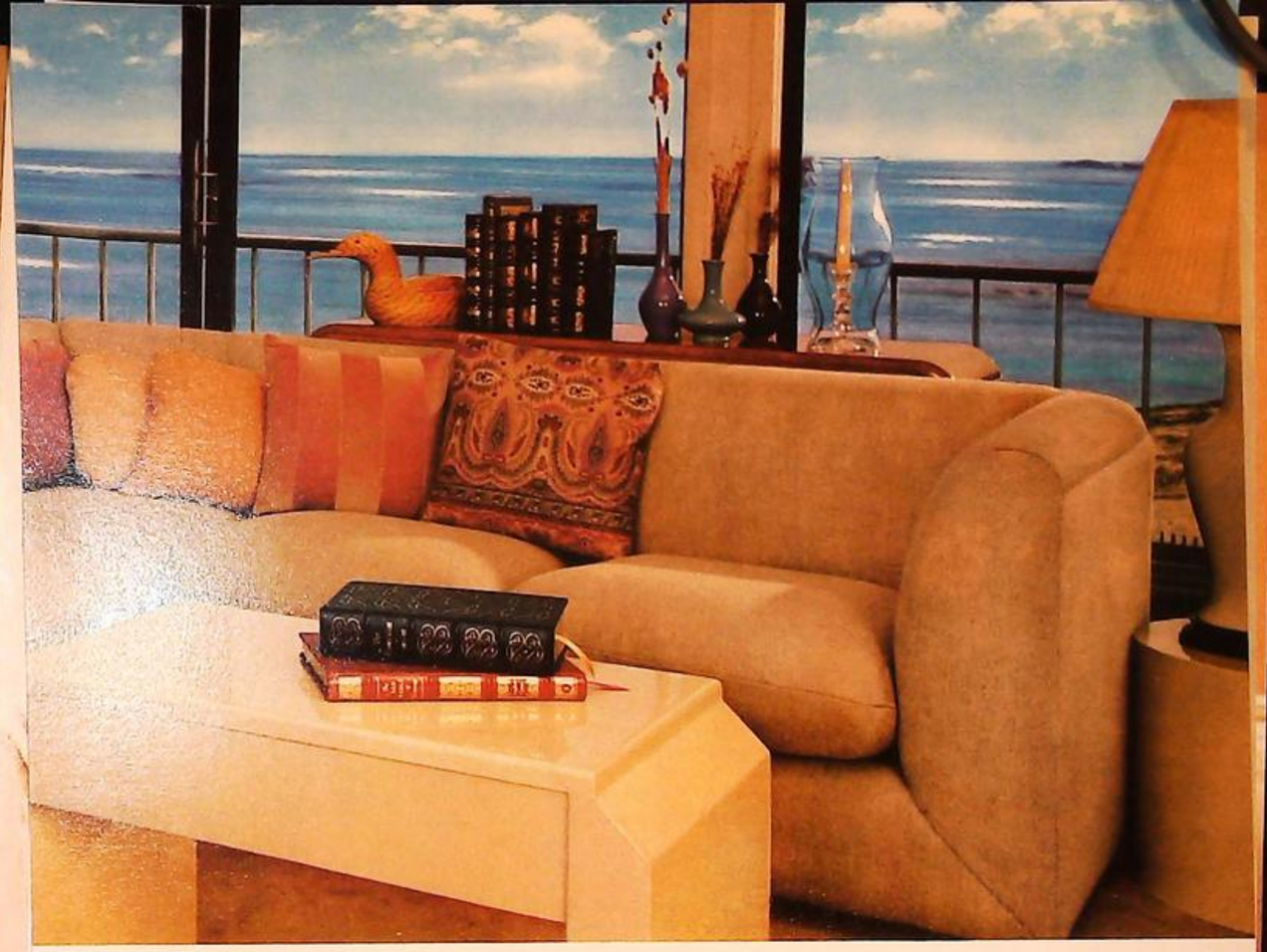
James H. Mumme
Vocational-education teacher
Eloy, AZ

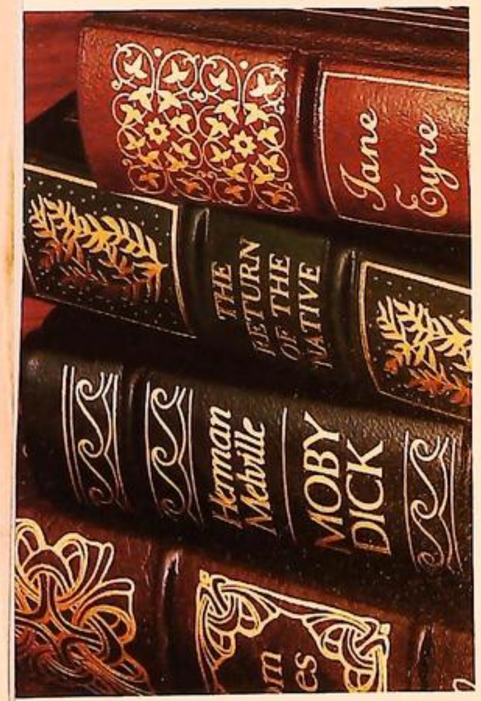
How about a 100-foot-long worm? They do exist! They are ribbon worms (Nemertea or Rhynchopods).

Charles Draper
Williamstown, NJ

More letters on page 26

Please send your letters to: Editor, Science Digest, 888 Seventh Ave., NY, NY 10106.





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LETTERS

CLONING IN SPACE

MIRACLE METAL

I would like to express my gratitude for your terrific article on Nitinol ["Miracle Metal," October 1981]. As a 14-year-old I would like to say that I was thrilled to see your subarticle on David Mitzi. Seeing the success of someone just a few years older than myself just strengthens my interest in futuristic technology that much more. After reading your article many times over I was convinced that the future of mankind may lie in compounds such as Nitinol and gifted young people such as David Mitzi.

Jana McClain
Fort Wayne, IN

I am shocked that such meager steps in research and development have been undertaken with the truly miraculous metal Nitinol since its 1958 discovery. In an environment heavily laden with toxic contaminants and an OPEC glut, I applaud those efforts toward harnessing this pure and endless source of power.

Tim Coriffin
San Diego, CA

We received several thousand creative suggestions on how to use Nitinol. We will run a sampling of them in a future issue. –Ed.

THE FIRST KILLERS

The caption accompanying my article "The First Killers" in the October 1981 issue says that the hawk-sized pterosaur *Rhamphorhynchus* "posed a continual threat to the lumbering brontosaur, which traveled in herds to protect its young from the leather-winged predators." Never would I make such a horrific claim.

Brontosaurs, larger than elephants, were threatened by many spectacular predators. No "winged lizard," however, was among those predators. *Rhamphorhynchus* was probably a ternlike fish-eater, perhaps even a hunter of smaller pterosaurs, but certainly no threat to any dinosaur bigger than a pigeon.

Also, I am in no way responsible for the caption stating that trilobites were "the world's first predators." They were not.

John C. McLoughlin
Tesuque, NM

Trilobites were among the world's first predators; scientists aren't sure what the first predatory organism was. The first entity to consume another entity for nourishment was probably a replicator molecule, according to Richard Dawkins in The Selfish Gene. *In competing for building-block molecules, some replicators, writes Dawkins, "may have 'discovered' how to break up molecules of rival varieties chemically, and to use the building blocks so released for making their own copies. These proto-carnivores simultaneously obtained food and removed competing rivals." –Ed.*

HUMAN FIREBALLS

"Human Fireballs," dealing with spontaneous human combustion (SHC), prompted a discussion between myself and a friend who is a German medical student studying at Stanford University. It was his contention that the article [October 1981] was sensationalistic. . . . I, a nonscientist, proposed that while the article may not have described a scientifically provable phenomenon, it nevertheless could have some value, if merely to prompt the sort of discussion we were engaged in.

The important fact, which I hope all scientists will understand, is that intelligent laymen want to know what is going on in the world and enjoy being amazed by the wonders, the mysteries and even the horrors of life. To take away this opportunity would be a much greater crime than merely publishing questionable subjects dressed as science.

Dana C. Spencer
Palo Alto, CA

There is not a reputable chemist in the world who believes in human spontaneous combustion, yet here is a "science" magazine taking it seriously in an article.

Martin Gardner
Hendersonville, NC

Thank you for the article on human fireballs. This is a student-initiated discussion topic that comes up every year but has little authoritative literature available at a student level.

M. Timm Pschirgan
Colom[illegible]

Thanks to the readers who sent in their ideas about the causes of SHC, such as viruses, nervous energy (?) and gas (!).—Ed.

ASTRONOMICAL GUIDE

I am 14 years old, and a friend and I started an astronomy club. We recently got our hands on a three-inch reflector telescope and have been on my roof almost every night looking at the stars, the moon, Venus, Jupiter, etc. We have been looking for a guide to the night sky and would like it very much if you would include one in your magazine.

James M. Fairo
Clearwater, FL

For the many readers who have written to us requesting an astronomy guide: what information about the night sky do you want? What questions do you have about viewing the heavens or about astronomy in general?–Ed.

THE LONGEST SNAKE

In his 1961 book on the Amazon region, *The Cloud Forest,* author-naturalist Peter Matthiessen relates a story told to him by "an imposing source of information," a hotelier of Pucallpa, Peru, named Sr. Fausto Lopez. Lopez reported seeing an "old and harmless anaconda measuring 30 meters" (more than 90 feet) killed by Indians in the Huallaga River.

Courtland S. Lewis
Herndon, VA

Have you seen or heard about the longest snake in the United States or the world? If so, let us know about it.–Ed.

More letters on page 96

Please send your letter to: Editor, Science Digest, *888 Seventh Ave., NY, NY 10106.*

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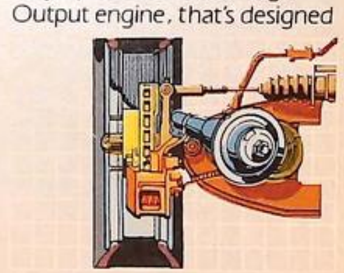

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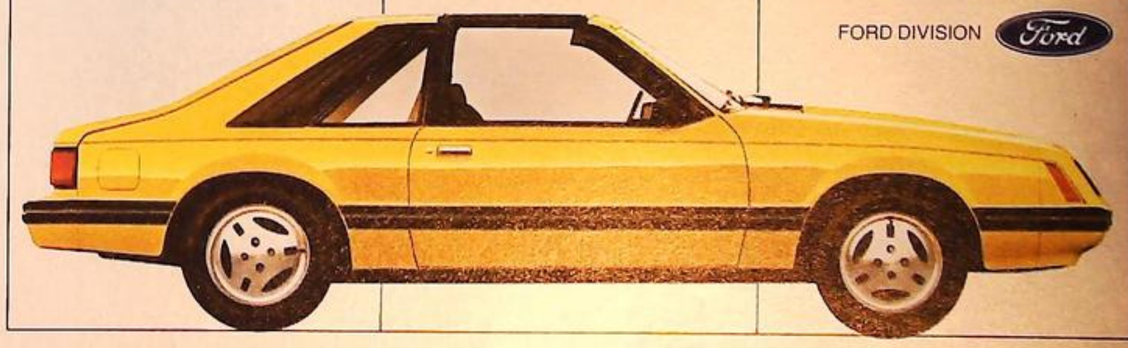

LOOK WORLD HERE FORD

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LETTERS

PICKLED DINOSAURS

NEW ALPHABET

To the Editors: While I was reading "New Age of Reason" [August 1981], my 12-year-old brother started to ask me about the UNIFON alphabet. Soon we were writing messages in UNIFON. Normally, my brother is a poor reader and speller. But with UNIFON's "spell the way you sound the word" system, he adapted to the alphabet in two hours.

Joseph Rooney, Age 14
Brooklyn, NY

To the Editors: UNIFON could certainly improve English; however, words such as *steak* and *stake* would be spelled the same way. How would one know which word is intended when context does not give the meaning? Also, what about the many dialects of English? With UNIFON, words would be spelled as pronounced.

George Saile
Poughkeepsie, NY

John M. Culkin replies:

English already has many words, such as bear *and* stake, *that have more than one meaning; we must depend on context for the meaning intended. A UNIFON dictionary would contain proper word spellings based on the standard English dialect.*

GIV U GÅ LÅK JOHN M. CULKIN SUMTHIU RASUNUL AND LOJIKUL LÅK FU METRIK SISTUM, AND THEN HE WYONTS TU CANJ FU ALFUBET, TAIPRAITARZ AND FU KALENDAR !

Translation:
To the Editors: Give a guy like John M. Culkin something rational and logical like the metric system, and *then* he wants to change the alphabet, typewriters and the calendar!

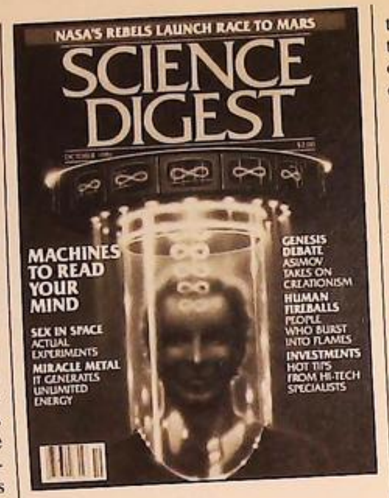
Dale L. Sherwood
Cedar Rapids, IA

Thanks also to June Prowt of Lincoln, NE, and Drew Clearie, of Columbia, SC, for their letters written in UNIFON.–Ed.

DINOSAUR RENAISSANCE

To the Editors: Your article on new dinosaur discoveries ["Dinosaur Renaissance," August 1981] was very interesting, and the illustrations were beautiful. I was especially intrigued by the possibility of finding a "pickled" dinosaur in Canada's tar sands.

Alexander M. Davidson
Charleston, WV


NASA'S REBELS LAUNCH RACE TO MARS
SCIENCE DIGEST
MACHINES TO READ YOUR MIND
SEX IN SPACE ACTUAL EXPERIMENTS
MIRACLE METAL IT GENERATES UNLIMITED ENERGY
GENESIS DEBATE ASIMOV TAKES ON CREATIONISM
HUMAN FIREBALLS PEOPLE WHO BURST INTO FLAMES
INVESTMENTS HOT TIPS FROM HI-TECH SPECIALISTS

To the Editors: In "Dinosaur Renaissance" [August 1981], many of the dinosaurs are represented in a stance in which their massive tails are extended high above the ground while in an apparently relaxed mode. . . . Is such a stance really accepted by paleontologists today?

Charles Robinson
Seattle, WA

George Olshevsky replies:

There are at least four reasons for believing that sauropod tails were generally held free of the ground: sauropod trackways almost never show the track of a dragged tail; in herds, dragged tails would be liable to damage from trampling; a sauropod tail probably weighed only a ton or two and would have required less energy to hold extended than the heavier neck and head; the way caudal vertebrae fit together in some sauropods indicates that their tails were held horizontally in a relaxed state.

MENTAL ILLNESS

To the Editors: I immensely enjoyed the article "World's Strangest Mental Illnesses" [July 1981]. It is better than most in our more formal journals.

H. Steven Moffic, M.D.
Baylor College of Medicine
Houston, TX

To the Editors: In a short piece entitled "Starving Amid Plenty" [with "World's Strangest Mental Illnesses"], you comment on the various possible causes of anorexia nervosa but omit the most obvious one: the insane desire of clothes designers to transform women into walking skeletons. Future archeologists, discovering our fashion magazines, will certainly conclude that famine was rampant.

L. S. Friedman
Miami, FL

REVISING THE TRUTH

To the Editors: "Revising the Truth" [August 1981] confirmed one thing for me. From the debate going on among astronomers and physicists about the Doppler effect and whether the Universe is expanding or contracting, neither group really knows whether they are coming or going.

L. Wesley Ives
Raleigh, NC

PENGUINS

To the Editors: I just finished "Land of a Million Kings" [July 1981] and cannot find the words to praise Roger Tory Peterson for his excellent text or Bruno Zehnder for his magnificent photographs.

Gretchen Noyes
Pinellas Park, FL

THE LONGEST SNAKE

To the Editors: When in doubt, check the authority, the official Guinness record: "The longest of all snakes (average adult length) is the reticulated python of Southeast Asia, Indonesia and the Philippines, which regularly exceeds 20 feet. In 1912, a specimen measuring 32 feet 9.5 inches was shot near a mining camp on the north coast of Celebes."

B. W. Gray
Beeton, Ont.

To the Editors: A longtime reward of $50,000 offered by the New York Zoological Society in New York City for a living specimen over 30 feet has never been taken.

Steve Meek
San Angelo, TX

Have you seen or heard about the "longest snake" in the United States or in the world? If so, please let us know. For more about the New York Zoological Society's offer, see "Snake Bounty" [Newscience, Nov/Dec 1980]—the article that spurred the "Longest Snake" series of letters.–Ed.

More letters on page 28

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

Reg.: 11 mg "tar," 0.8 mg nicotine—Men.: 11 mg "tar," 0.7 mg nicotine av. per cigarette, FTC Report Dec. '79.

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LETTERS

UNCLAIMED BOUNTY

MULTIPLE BIRTHS

To the Editors: As both an identical and a fraternal member of a triplet set, I feel rather well qualified to comment on Joann Rodgers's article "Me, Myself & Us" [Nov/Dec 1980]. . . . I am slightly disturbed with Rodgers's portrayal of the "astonishing" behavior of twins. I find much more astonishing the delightful differences between my triplet sisters and myself—differences that were manifest from my earliest memories. I am grateful that my parents had the wisdom to foster those differences, which are crucial to the maintenance of a unique self-image.

I sincerely doubt that any combination of my triplet set will ever buy identical crystal tableware on the same day.

Peggy Lee Fiedler
Berkeley, CA

THE LONGEST SNAKE?

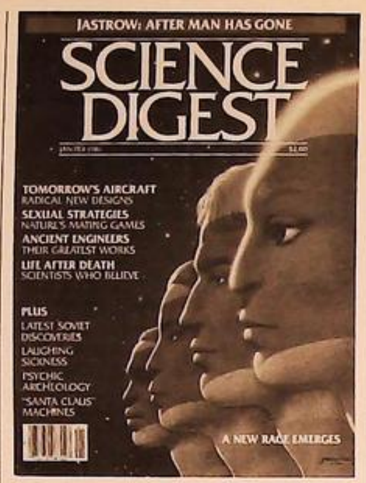
To the Editors: I thoroughly enjoyed your Nov/Dec 1980 issue. As a scientist I find your style accessible and factual. The information in "Snake Bounty" (under Newscience Update), however, was amiss. First, it is unlikely that there is anyplace on this Earth today where snakes over 30 feet in length are "abundant." In addition, while the reticulated python has twice been recorded at or over 32 feet, the "average" length for the species is far less.

Originally hailing from New York, I can assure you that few "New York experts" would accord the honor of longest North American serpent to the Western diamondback (maximum recorded length: 89 inches). That distinction must go to the Eastern indigo snake (maximum recorded length: 103.5 inches).

Arthur E. Rosenfeld
Herpetologist
Santa Barbara, CA

To the Editors: The Western diamondback is not the longest snake in the United States. Our Eastern diamondback is the longest venomous snake in this country. The coachwhip snake is the longest nonvenomous snake in the U.S. Both of these species have been recorded at over 100 inches.

Barney Interest
Florida Herpetological Society
Lake City, FL



To the Editors: The reason the snake bounty has not been collected is because there has never been an *absolutely verifiable* snake of 30 feet. Pittsburgh's zoo had a reticulated python that was almost 29 feet when it died. Apparently the largest snake living in captivity is another reticulated python in England; in 1973 this specimen measured 27 feet 4 inches in length and weighed 220 pounds.

H. Leon Abrams, Jr.
Associate Professor of Anthropology
Emanuel County Junior College
Swainsboro, GA

Have you seen or heard about "the longest snake" in the United States or the world? If so, please let us know about it.–Ed.

THE LEPCHAS

To the Editors: In your article "What Price Freedom?" [Charles and Cherry Lindholm, Nov/Dec 1980] you said, "The Lepchas' sex lives are notoriously active. Impotence is unheard of. . . ." Later you said that the Lepchas "have a low birthrate and a high incidence of sterility." Could you please explain this contradiction?

I especially enjoyed "Hospital Addicts" by Paula Dranov and "Inside the Sex Lab" by Albert Rosenfeld. Your magazine is so varied, I never lost interest for a moment.

Elisa Shore, Age 16½
Melrose Park, PA

The Lindholms reply:
There are several possible reasons for Lepcha infertility. For one thing, frequency of intercourse may have a negative effect on fertility, since male sperm count is lowered. The practice of sexual intercourse with prepubescent girls may also decrease the girl's childbearing potential. Other factors include long periods of breast feeding and a high incidence of genitourinary infection. Anthropologist Geoffrey Gorer, however, is of the opinion that the low birthrate is a genetic trait.

FACE TO FACE

To the Editors: Robert Claiborne's interesting speculations about the human way of making love ["Face to Face," Nov/Dec 1980] have one factual flaw: he writes that the missionary position is "unique to our species." However, there are documented observations of gorillas in the wild and in zoos copulating face to face. This fact may, however, tend to support Claiborne's thesis that face-to-face sexual contact led to the ill-defined qualitative love humans practice. It seems that gorillas, more than any other of the great apes, enjoy what observers describe as a loving family life.

Vic Cox
Los Angeles, CA

MEAT OF LIFE

To the Editors: Re "Meat of Life," by Karen Janszen, in Nov/Dec 1980. I classify this article under the heading "I've heard everything now department"; nevertheless, I read it with interested revulsion.

I am a West Indian now living in Canada, and although placentas are not eaten in the West Indies, there is a custom there concerning the umbilical cord. The "navel string" is of great significance to many West Indians; they claim that it is important that it should be buried on the family property with a fruit tree planted on top. The task must be performed by the mother without aid from anyone. This ensures that no psychological tie or bond develops between the child and its mother . . . also that her affections are not diverted from her husband to her child.

John K. Howes
Downsview, Ont.

SPECIAL REPORT

IDIOT GENIUSES

BY PAVAN SAHGAL

Simple reading and arithmetic baffles them, yet they can calculate cube roots in a flash or mimic foreign tongues instantly. Scientists are now probing the secrets of their bizarre mental gifts.

To the doctors at Letchworth Village, a state institution in Thiells, New York, Charles and George, identical twins, seemed typical enough: born three months prematurely in 1939, placed in incubation for the first two months of their lives, declared mentally deficient at the age of three and institutionalized at the age of nine. They appeared to be moderately retarded young men with IQs in the 60–70 range, below normal in most functions but competent enough to act as interoffice messengers at the institution.

It was not until 1963 that Dr. William Horwitz, a visitor from the New York State Psychiatric Institute, noticed something odd about the twins. While they were clearly retarded, befuddled by the simple request to subtract 10 from 20, when it came to extremely complicated calendar calculations, the twins were veritable geniuses. Give them a date of birth, and they could tell within seconds how many days had elapsed since the last birthday and how many would transpire before the next. Their blue eyes scarcely blinking behind their thick glasses, they could rattle off the years in which a given date would fall on a Sunday or which month in a given year would commence on a Monday. They could identify in no time the day of the week for dates as far in the future as A.D. 7000 or do the same for dates hundreds of years in the past. Although they knew nothing of the differences between the Julian calendar and the Gregorian calendar (to which the English-speaking world switched in 1752), their answers compensated for the changeover anyway.

Horwitz brought the twins to New York, where after a year of exhaustive testing and observation (to be followed by five more) they could still say no more about their uncanny skill than "I know" or "It's in my head." After exploring their abilities with psychiatrists, psychologists, internists and mathematicians, Dr. Horwitz was forced to admit that "We have no better explanation."

What Horwitz had stumbled upon in 1963 was a pair of idiot savants, members of a strange psychological club that, through the centuries, has included wizards of calculation, designers of complicated machines and models and accomplished artists and musicians who were quite helpless at most other tasks. The fact that the term *idiot savant* is a misnomer—for these people were neither idiots (those of the lowest IQ) nor savants (from the French, meaning "persons of

Pavan Sahgal, a winner of journalism awards here and in India, was until recently editor of India Abroad, *a New York-based newspaper.*

Illustration by Carlos Llerena Aguirre

LETTERS

"ANTECESSORS OF THE FUTURE"

RACE OF THE FUTURE

To the Editors: I found the Jan/Feb 1981 article "Racial Odyssey" by Boyce Rensberger very interesting.

I am an antecessor of the future. I am brown-complected, born in West Germany of a Hungarian mother and a father unknown. Because I do not identify with a race or nationality, I am ambiguously defined and have more mobility within the races and nationalities than most people. . . . Perhaps the race of the future will appreciate this gift—and there will be no prejudices.

Paula Morrow-Dyan
New Orleans, LA

What will the races of the future be like? Write us with your ideas.–Ed.

NUCLEAR WASTE

To the Editors: About your enticing article on nuclear wastes in the Jan/Feb 1981 edition: I would like to inquire about one thing. That is, if you can bombard stable particles, thus making them unstable, why can't you bombard unstable particles, making them stable?

Many scientists believe firmly that space is symmetrical. . . . So logically, the bombardment of particles that makes radioactive particles should have a counter-bombardment that makes them stable.

Derrick Harmon
Laurelton, NY

Stephen Solomon replies:
As discussed briefly in the article, radioactive waste could someday be bombarded with subatomic particles and converted into nuclides with more desirable properties—they might become more stable, less toxic or shorter-lived. This process, called transmutation, would probably take place inside a fission reactor. But because the transmuted wastes would still be radioactive, they would have to be placed inside a waste repository.

MORE ON THE LONGEST SNAKE

To the Editors: I am responding to your question: "What is the longest snake?" [March 1981, "Letters"]. According to the information I have collected, the longest snake in the world is the South

American anaconda found in 1944. A length of 37.5 feet was reliably reported for a specimen shot on the upper Orinoco River in eastern Colombia. It was measured but later recovered and escaped.

Robert Zotti
Union Catholic Regional H.S.
Scotch Plains, NJ

To the Editors: Concerning the search for a snake over 30 feet, H. Leon Abrams, Jr., suggests [in his letter] the futility of recording one "absolutely verifiable."

But of hope are those many reports by respectable witnesses of giants roaming where most would hate to get their feet wet, such as that beast reported by Father Victor Heinz floating down the Amazon with a body as thick as an oil drum and a visible length of some 80 feet. Even more encouraging was the anaconda weighing 5 tons from Brazil reported by the newspaper *Diario* in 1948.

H. Allen Hass
Portland, OR

Have you seen or heard about "the longest snake" in the United States or the world? If so, please let us know about it.–Ed.

BOOK REVIEWS

To the Editors: I really like your new look. Photographs are great. My question is, where can I find your book reviews?

Debbie Herries

Our new monthly book review section will start in the June 1981 issue.–Ed.

ANCIENT WONDERS

To the Editors: It is interesting to read in "Ancient Wonders" [Murray Rubenstein, Jan/Feb 1981] that the Chinese were centuries ahead in some critical areas. The more startling fact is that the most significant ideas of the Orient are still waiting after thousands of years to be accepted in the West. One of these is the existence of a life energy. . . . It seems Western science is struggling to reinvent the wheel, while some ancient cultures have learned to control their life energy, and thereby have attained "unexplainable" feats ranging from acupuncture to fire-walking.

H. L. Han
Delft, Holland

To the Editors: Murray Rubenstein in the article "Ancient Wonders" states, "We wonder why the Greeks and Romans failed to develop their science further." We who have studied Christianity don't wonder, we know!

Christianity burned the great library in Alexandria, was the main cause of the Dark Ages and fought scientific advancement at every turn. There was a time when Christianity ruled, it was called the Dark Ages! Look out America, they are trying to do it here, now.

Neil C. Reinhardt
Harbor City, CA

VISIONS OF AN AFTERLIFE

To the Editors: Just received my very first issue of your fantastic magazine and have read it from cover to cover! I was particularly interested in Dina Ingber's piece "Visions of an Afterlife" [Jan/Feb 1981].

It seems to me that the reason for all those similar near-death experiences (NDEs) can be explained simply. . . . NDE probably takes place in a matter of moments right inside the dying brain. And since human beings are all more or less electrically "wired" the same throughout their nervous systems, and they all go through roughly identical chemical and electrical changes as they approach death, why wouldn't they encounter similar experiences? . . . I'm convinced that NDE is a hallucination of a brain going through ultimate stress.

Steve Stanga
Brookings, SD

Continued on page 112

Mood Maker

Set the mood in your home or office with this 13 inch wide AM-FM, cassette and 8 track Stereo Music Center.

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LETTERS

Continued from page 30

To the Editors: In classic, outdated, sci-fi, superstition style, "Our Brain's Successor" has extended erroneous conclusions to a ridiculous extreme. Computers cannot be motivated to set their own goals because there is no associated reward with any goal they might set. Only the computer's programmer can bask in the glory of the computer's achievement.

Paul Calkins
Ann Arbor, MI

To the Editors: I think that once computers have become intelligent enough to answer a few questions about life, death and the potentials of conscious experience, they will then establish defense and self-maintenance systems for themselves, synthesize pleasure and press their own nirvana buttons forever.

A.M.T.

To the Editors: "Our Brain's Successor" brings up a troubling thought—the termination of man's evolutionary increase in brain capacity as it relates to computer technology. . . . Will man's ability to think, reason, emote, etc., be affected by computer technology? If computers are doing our thinking for us, will they decrease our ability to think?

In the Jan/Feb 1981 issue ["Post-Human World"], Mr. Jastrow stated that Earth after man will only have computers. He is not leaving us a very pretty picture for the future.

Phil Press

To the Editors: As an ethnoecology enthusiast, I really enjoyed Naomi Bloom's article on Paolo Soleri's "Human Beehives" [March 1981] as well as the Lindholms' regular reports. However, the series of articles by Robert Jastrow putting forth his prophecy for the future of mankind has upset me. . . . Do all the scientists studying the ongoing drama of our cultural and physical evolution consider calculation and intelligence the most important functions of the human mind? Is life simply, as one scientist defined it, "an electromagnetic wave in a medium of protein semiconductors"?

Mark Crosby
Panama City, FL

HUMAN BEEHIVES

To the Editors: I just finished reading the article on Arcosanti ["Human Beehives," March 1981] and was very impressed. I've seen this amazing city on television, and I've been interested ever since.

John Whitehead III
Fredonia, KS

THE LONGEST SNAKE

To the Editors: On reading the March 1981 edition of your magazine, I found some letters to the editor about the longest snake in the world or U.S. ["Snake Bounty"].

During World War II . . . there was a picture [in an army magazine] of a python hung over a jeep with the top up. It lay on the ground in front of the jeep, up, over and out on the ground behind. It is in my mind that it was 33 feet long.

James F. Anderson
Melstone, MT

To the Editors: The following news item from 1979 will perhaps make the arguments of herpetologists look highly academic.

"Jakarta, Indonesia—Four human corpses have been found inside a giant python which had been crushed by a bulldozer . . . Two of the bodies appeared to have been only recently devoured as they were still clad in their shirts and trousers.

"The python was one of two, each about 25 meters long, which blocked the way of the bulldozer assigned to clear up a section of a forest for a construction project. The operator said he battled the snakes for over an hour before finally killing one of them."

Gregory De La Castro
Conifer, CO

Have you seen or heard about the longest snake in the United States or the world? If so, let us know about it.–Ed.

STERILITY/IMPOTENCE

To the Editors: Charles and Cherry Lindholm missed an important point in the "Marriage and Incest" sidebar to their article about the Lepcha culture ["What Price Freedom?" Nov/Dec 1980] The authors explain the incest taboo as a "cultural formulation maintaining the integrity of the human family," noting that without "the family structure, the social order would collapse."

The relationship between the incest taboo and the social order exists on another plane. Because exogamy, or marrying outside the family, is in some societies the only way for a family to expand its alliances, incest represents, as Peter Farb noted in *Man's Rise to Civilization*, "an absurd denial of every man's right to increase the number of people whom he can trust." Understood in this manner, the incest taboo is vital to the survival of the group.

Thanks for presenting a stimulating and informative magazine.

Don S. Altschul
Irvington, NJ

To the Editors: I refer to the letter of Ms. Elisa Shore, age 16 1/2 [concerning "What Price Freedom," Charles and Cherry Lindholm, Nov/Dec 1980], which you printed in the March 1981 issue. I thought the young lady was inquiring into the seeming ambiguity in the meanings of the words "impotence" and "sterility," since I had the same question as a boy. I don't know if that was the point of her letter, but I do see that you didn't clear up the matter for any young person reading your very excellent scientific journal.

Sterility can affect either sex. It means a woman's inability to produce the egg or a man's inability to produce the sperm that are both required to create a new life. Impotence refers specifically to the inability of a male to achieve erection. This is generally thought to be psychological in origin, while sterility is biological.

Thanks again for a truly excellent science magazine that is readable by those not engaged in science for a living.

Ralph J. Huntington
Brooklyn, NY

WAVE POWER

To the Editors: I was fascinated with the articles, "Wave Power" and "Power-Full Wind Farms" [Technology], in the March and April 1981 issues. I have always wondered what the world would be using for electricity when I am older. These two articles have given me insight on what to expect.

Richard Lopez-Rincon
Student
Miami, FL

GALACTIC VOYAGE

To the Editors: Thank you for your galactic voyage—Timothy Ferris's "The Milky Way and Beyond," March 1981.

Vere Griffith
Ormstown, P.Q.

EVOLUTION vs. CREATION

To the Editors: The current conflict between evolutionists and creationists is healthy for science. It would help immensely, though, if both parties would confine their arguments to scientific data and not try to malign the opposition. Such a tactic is unworthy of a true scientist. The evolutionist is especially culpable here, but perhaps there is a good reason for it. Maybe, just maybe, it is the only defense he has.

Terry Hulse
Fullerton, CA

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LETTERS

Continued from page 10

THE LONGEST SNAKE

To the Editors: Here is a postcard [right] I found at an antique show—photographic evidence of a 30-foot python.

Brian K. Polsley
San Francisco, CA

To the Editors: I have been following the "longest snake" controversy for the past few months . . . . It is generally believed, and fossil remains verify, that snakelike creatures 80 feet in length lived during the Jurassic Period—roughly 100 million years ago. There is, in fact, convincing data describing a viperine tooth more than six inches long unearthed many years ago. This would indicate a *venomous* snake of around 60 feet. The prospect stirs the imagination of any herpetologist! However, there is not a solitary shred of scientific evidence to indicate that any serpent even approaching that prodigious size occurs today.

R. L. Jarrett
Des Moines, IA

Have you seen or heard about the longest snake in the United States or the world? If so, let us know about it.–Ed.

ASTRONOMICAL GUIDE

To the Editors: We would be very happy to see a seasonal guide to upcoming astronomical events in the magazine, especially since we just bought a telescope.

Lynne and Brian Taylor
Davenport, IA

Please write if you would like us to begin an astronomical guide.–Ed.

MUCH ADO ABOUT NOTHING

To the Editors: Your article "New Ways to Measure the Universe" [Update, June 1981] begins, "These days you won't find many astronomers arguing over how the Universe was born." Sad but true. Yet Wallace and Karen Tucker's article "Much Ado About Nothing" points to possible evidence inconsistent with the Big Bang theory. Should it turn out that indeed the Universe does contain vast empty spaces, it should rekindle the cosmological debate.

Richard F. Adair
Dracut, MA

To the Editors: Vast concentrations of "nothing" deep in space: a discovery? Well, to me, space and nothing are the same. Once you reach past the last galaxy, the last particle of the Universe, you will be left with space, empty nothing.

Leo Desilets
Vancouver, B.C.

To the Editors: I feel that we know almost nothing about nothing and should spend more time studying nothing.

Roy E. Hickman, Sr.
Wauchula, FL

LINUS PAULING

To the Editors: *Science Digest* erred in its otherwise excellent article on Linus Pauling ["The Great Gadfly," June 1981] by referring to Pauling's objections to the Mayo Clinic study of vitamin C in cancer as a "retort." Far from being a retort, Pauling's contact with Dr. Moertel had been initiated long before the study got under way. Pauling informed Moertel that vitamin C appeared to work only on patients whose immune systems had not been destroyed by chemotherapy. Moertel acknowledged the letter but went on to use postchemotherapy patients in his study. What is even worse, he failed to mention this serious departure from Pauling's own research when he published his "disconfirmation" of Pauling's work in the *New England Journal of Medicine*.

Bernard Rimland, Ph.D., Director
Institute for Child Behavior Research
San Diego, CA

GENERATOR CONTROVERSY

To the Editors: I was disappointed in your enthusiasm over the "generizer" concept for extracting electric power from moving vehicles by means of a piston ("hit plate") mounted in the roadbed ["How Cars Can Generate Electricity," Technology, May 1981].

There are some serious errors in the claims made for the potential of the device. First, you failed to distinguish between power (kilowatts) and energy (kilowatt-hours). . . . I agree that one can produce about a kilowatt of *power* while crossing the plates, but this power is sustained only while the car is crossing the plates—roughly a second. So the energy delivered is only about 1 kilowatt-second, only enough to burn a 100-watt bulb, for about 10 seconds.

Second, no attention was given to the actual origin of the energy delivered by the generizer. In order to push the hit plate down, the car must climb onto it. The car must burn more gasoline to do this than it would if it merely rolled over a flat surface.

There is no free lunch.

William K. Terry
Professor, School of Nuclear Engineering
Purdue University
West Lafayette, IN

To the Editors: *Science Digest* ought to restrain its optimism regarding alternative sources of energy, at least to the extent of inspecting the numbers. So ought the inventors.

Steve Larson
Phoenix, AR

To the Editors: Mr. LeVan's generizer device sounds almost too good to be true. In fact, it *is* too good to be true.

Peter Martino
New Paltz, NY

Many readers expressed strong opinions about LeVan's scheme—some applauded the concept, others lashed into the specifics, correctly pointing out errors in the calculations. LeVan declined to reply to the criticisms, but in interviews he has explained that the generizer recovers energy from a car as it is coming to a halt—at a toll plaza, for example. The hit plates help the car stop, so no extra gas is burned.–Ed.

UPDATE

DRESS CODE OF NAKED KAYAPO IS ELABORATE

Man is born naked but is everywhere in clothes—or their symbolic equivalents.

The Kayapo Indians, of the southern borders of the Amazon forest, possess an elaborate "dress code"—which might escape notice by a Western observer since the Kayapo wear no clothing!

An examination of these seemingly naked people reveals a system of social identification conveyed entirely through bodily adornment, according to Terence S. Turner, associate professor of anthropology at the University of Chicago.

The process begins when large, cigar-shaped plugs are inserted in the ears of Kayapo babies. Painted red, a color associated with notions of vitality and energy, the plugs are intended to stretch the openings in the ears two or three centimeters. At weaning, they are removed and strings of beads are tied through holes pierced in the lobes. The Kayapo continue to wear these bead earrings throughout adult life. Turner suggests that this stretching and piercing symbolizes the development of understanding—opening the ears to language.

Kayapo baby boys also have their lips pierced. At first, a string of beads with a bit of shell is placed in the hole to keep it open. Later, young bachelors put progressively larger dowels through the holes, continuing the process throughout early manhood, until they attain the level of "fathers-of-many-children." Now senior males, they enjoy considerable stature as orators, and they wear a large, saucer-shaped lip plug as the physical expression of their oral and social dominance.

As a Kayapo man grows old, he retires from active tribal life, and this change in status is signaled by a change in his lip plug. It may become smaller, or it may take the form of the most prestigious object in the entire Kayapo wardrobe: the cylindrical lip plug of ground and polished rock crystal worn only by elder males. These neolithic valuables, which may reach six inches in length, are generally clear to milky white, a color associated with old age and with ghosts.

The Kayapo have raised body painting to an art. There are two distinct styles, one for adults and one for children. The latter, by far the more elaborate, consists of intricate geometrical designs traced in black with a narrow stylus made from the central rib of a leaf. It involves building a coherent overall pattern out of many individually insignificant lines and dots. The final result reflects the unique relationship between painter and child.

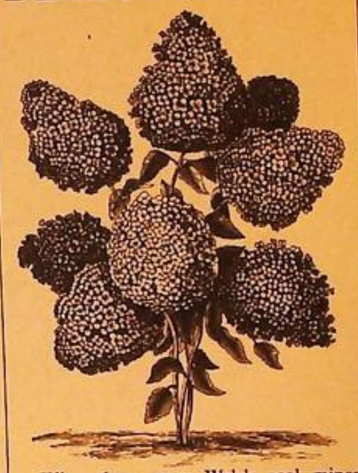
Adult body painting uses simple, broad strokes that can be applied quickly with the hand. Men and women gather separately on regular occasions to paint one another, using a style that is uniform for the whole group and which symbolizes fully socialized adults acting collectively.

Turner points out that the differences in style between the painting of children and adults parallel the key differences in their social attributes—specifically, their relative levels of socialization.

A Kayapo mother uses a leaf-rib stylus to paint her child. The job will take two hours.

Illustration courtesy of The New York Botanical Garden, photo by Dennis Werner

PLANTS HELP DETECT METALS



What does every Welsh coal miner know that may lead to the discovery of vast new mineral deposits?

He knows what it is that turns white or pink hydrangea petals blue.

The secret is coal dust in the Welsh garden. The minerals in the dust are taken up by the hydrangeas and change their pigmentation. As a result, the Welsh, ordinarily not great gardeners, have some of the most colorful backyards in Great Britain.

The principle is now being exploited by geophysicists who are interested in finding new sources of such valuable minerals as cobalt, nickel, copper and zinc.

It is known that minerals in the soil beneath trees can retard chlorophyll production and cause subtle changes in the light reflected by the leaves. But these subtle changes can't be detected by the usual cameras and other photosensitive devices used in Earth-survey projects.

William Collins and Hong-Yee Chiu have now devised an instrument—a 500-channel spectroradiometer—that can be carried over forests in a light aircraft to pinpoint these telltale light patterns. The first step in their research at Columbia University and NASA's Institute for Space Studies was to identify certain physical properties of the trees to be surveyed and to filter out interference so that the specific spectral signal produced by the minerals could be isolated.

Dr. Collins said the task was "something like picking out a faint A sharp over the roar of a subway.

"Of course, the device doesn't identify specific minerals; it tells us minerals are there, and then somebody has to go and dig," he added.

KLUTZY CHIMPS

A chimpanzee can "make" and use a tool, but he can't carry a bunch of bananas. And this is one way chimpanzees are most like—and unlike—people.

Chimps, like people, use tools in an adaptive way to meet a variety of problems posed by the environment. They use blades of grass, vines or sticks to "fish" for ants and termites; they chew up masses of leaves to make sponges for collecting honey and water or for wiping dirt off their bodies. With twigs and sticks they probe unfamiliar objects; with leafy branches they swish flies away; and with rough stones they break open nuts.

But unlike people, chimpanzees discard their tools after they use them because they can't take them along. Chimps can't carry *anything* for very long or very far, say primatologist Jane B. Lancaster and anthropologist Phillip Whitten; they need their front limbs for locomotion.

In fact, when a feeding station for chimps was established on an African reserve, many of them came to collect bananas. They tried to transport them in every conceivable way: in their mouths, feet or hands, under their armpits and chins, even between their thighs. Loaded up, they retreated to climb nearby trees—dropping bananas with every step.

What is the most powerful electrical phenomenon in nature? Lightning! A bolt of lightning may have a current of 100 million volts and reach a temperature as high as 54,000 degrees Fahrenheit—five times hotter than the surface of the Sun.

THE MYRIAD MEANINGS OF BIRDSONG

A songbird's whistling melody is one of the most sophisticated forms of communication in the animal kingdom, and no one who understands its complexity would ever again use the word "birdbrain" lightly.

In fact, studies of bird "language" have uncovered some remarkable similarities between the brains of birds and humans, as well as surprising information about how birds learn.

Some bird calls, such as the simple cries of chickens and ringdoves, are inherited. More sophisticated songsters, including many kinds of finches and sparrows, develop their repertoires through a mysterious interaction of learning and innate knowledge. These birds learn to sing largely by mimicking older birds—but only those of their own species.

At Rockefeller University, researchers Peter Marler and Susan Peters have shown that some young birds have a finely discriminating ear. Using a computer, they created a tape with combined sounds of two closely related species, the swamp sparrow and song sparrow, and played it repeatedly for a group of male swamp sparrows. The chicks were able to pick out the sounds of their own kind—even though they had never heard them before—and to produce new songs that were pure swamp-sparrow melodies.

Physiological studies of the brains of songbirds have had some equally surprising results.

Fernando Nottebohm, also of Rockefeller University, discovered that the left hemisphere of the brain controls singing in canaries and finches, just as in humans the left hemisphere controls speech. Such left-right specialization had never before appeared in the brains of nonhumans.

Nottebohm found that apparently the bird's brain contains duplicated, or "redundant," areas, and the right side can take over when the left side is damaged. "People have wondered for years how much redundancy there is in the human brain," he remarks. "This is a point of great interest to neurologists, because they need to know whether other parts can compensate for damaged areas. Studying the bird's resilient brain may offer some clues."

Although researchers have begun to understand *how* birds produce their songs, they still don't really know *why*. In general, birds sing to stake out their territory or to attract a mate. And though it would seem that a simple "keep out" or "come hither" call would suffice, many birds' songs in fact become more varied with each season—especially versatile species may know a hundred or more tunes.

One theory, held by John Krebs of Oxford, suggests that the very size of a bird's musical vocabulary may discourage enemies: a few birds repeating a wide variety of songs could sound like a larger, and more formidable, group than they actually are and thus scare intruders away from their territory.

A bird's repertoire could also have a sexual function. Rockefeller University researchers find that as male canaries age, their songs become longer and more complex. And when female canaries hear tapes of complex songs, they lay more eggs. It may be that the females can tell a male's age by the songs he sings, and they may find the older birds—who have proved their ability to survive—more attractive as partners.

SNAKE BOUNTY

Not a single soul has tried to collect a $50,000 bounty offered by the New York Zoological Society ever since 1910. All you have to do is present the Society with a live snake more than 30 feet long from tongue to tail. Trouble is, the traveling expenses to bag such a specimen would be enormous. Snakes the right size are abundant only in places such as South America, where an anaconda may run as long as 37 feet, or Asia, where the reticulated python averages about 33 feet. As for the United States, New York experts agree that the longest snake would be a Western diamondback rattlesnake, which stretches only to six or eight feet. The 1910 offer still stands.

The Earth's rotation rate is changing. At present, it is slowing down considerably faster than the average over the last three hundred years. In the distant future, one of the effects of the decelerating Earth will be that the need for leap years will disappear: in a few million years' time, there will be 365 days in the year, not 365.25 as now.

Derek Howse
Greenwich Time

The small slice of quartz crystal in an electronic digital watch vibrates over 56,000 times per second.

Illustration by Kimble Mead

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Remember Thou Keep holy the Lord's Day.
The Seventh Commandment
Thou shalt not steal.
The Fifth Commandment
Thou shalt not kill.

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LETTERS

"EINSTEIN DETHRONED!"

BUSINESS WITHOUT SCIENCE

To the Editors: Allow me to congratulate David Vogel on an excellent and all-too-true article, "Business Without Science" [July 1981]. It is incredible to have to deal with managers who know virtually nothing about the work they direct.

Glenda C. Cashiola
Houston, TX

To the Editors: I was greatly impressed with "Business Without Science." . . . Many competent engineers and scientists have long been aware of the deficiencies in management. However, as subordinates, they may not openly be critical of their supervisors' actions. They stay subordinate or adapt to prevailing trends; both courses lead to mediocrity.

Reinhold Fischer
Chemical engineer
Cambridge, OH

SCIENTIST AND LAYMAN

To the Editors: In response to the letter "Scientist and Layman" by Michael K. Condon [June 1981]: And who are you, Mr. Condon?

I suspect if you were editor, all "layman" letters would be quickly assigned to the trash, and this highly interesting magazine would become another scientific journal read only by professors and scientific experts.

Lewis V. Durling
Layman
APO, NY

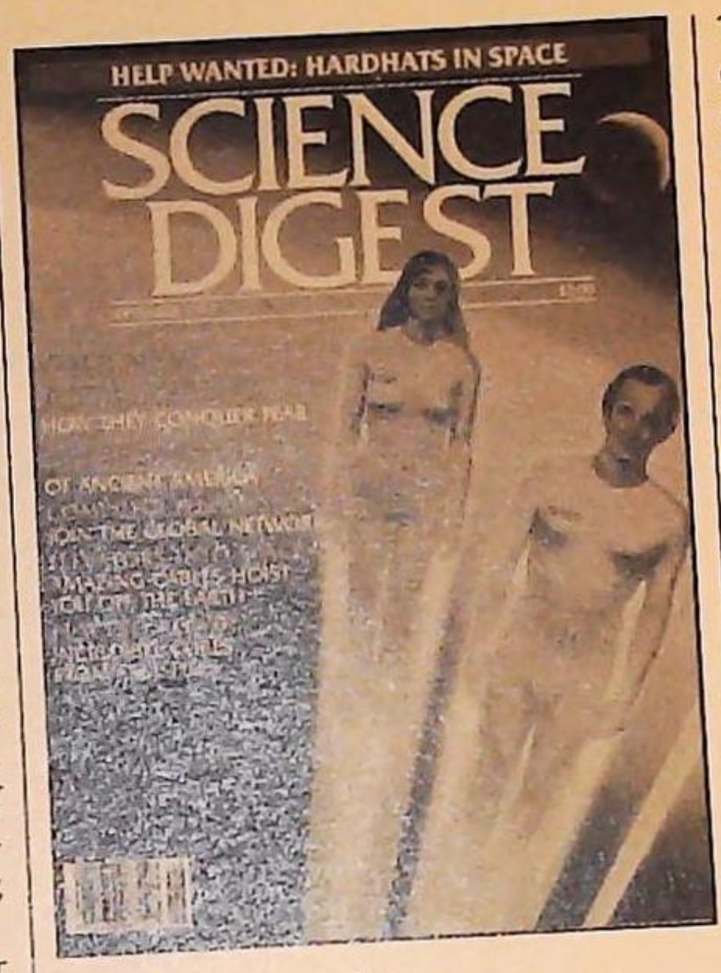
MYSTIC IN YOUR BRAIN

To the Editors: Midway through "Releasing the Mystic in Your Brain" [May 1981] I knew I must write to compliment you on its excellence.

Dennis Harris
Clovis, CA

To the Editors: In regard to your May 1981 article "Releasing the Mystic in Your Brain," am I misinterpreting same? Do I believe in Jesus Christ because of a relationship involving endorphins and serotonin? I thought my ethics and values were influencing factors.

Martha Dreunan
Joplin, MO



Judith Hooper replies:

The article does not claim that the teachings of the world's great religious leaders or the beliefs of an individual can be reduced to brain chemistry. It merely suggests that a greater-than-ordinary receptivity to what Aldous Huxley called "Mind at Large" requires an out-of-the-ordinary brain chemistry.

MICRO MILLENNIUM

To the Editors: Your June 1981 issue literally made the rounds in our office and the best article, by consensus, was "Micro Millennium." Its contents were concise and contained technical information for the most astute engineer in our office. Its story line and explanation of technical terms were equally enjoyed by the non-engineering staff.

Charles E. Bennett
The TRW-Fujitsu Company
Hasbrouck Heights, NJ

MIRAGES

To the Editors: The most exciting news of the June issue was modestly hidden away on page 28. Surely modern physics is in an uproar! Einstein has been dethroned! I refer, of course, to the article titled "How Heat Produces Mirages," which asserts: "Light travels faster in warm air than in cold. . . ." Pray tell, how much faster?

David W. House
Aurora, OR

To the Editors: The speed of light is a constant. I like to believe that what I read in science books and magazines is valid, but such incongruities make it difficult.

Haddon Zia
Willingboro, NJ

The Newscience Staff replies:
Modern physics states only that light travels at a constant speed through a vacuum. But when it passes through a material medium, it travels more slowly, depending on the density of the medium. According to Dr. Victor Granatstein, head of the electron beam applications branch of the U.S. Naval Research Laboratory, "When light passes through a material medium, you effectively have new sources of light. You're exciting molecules of matter to radiate themselves. The time lag involved in the molecules' being excited and emitting a new photon effectively slows down the entire wave packet." (See "When Light and Matter Collide," page 104.) –Ed.

THE LONGEST SNAKE

To the Editors: Since I read in one of your issues about the reward being offered by the New York Zoological Society for a snake 30 feet or longer, I have gone in the pursuit of such a specimen.

I contacted my brother who lives in Bogota, Colombia, and he agreed to proceed to the Amazon. He has made three trips so far and feels that snakes of that size or larger have been sighted and/or captured. At about the time my brother approached some locals and asked them to hunt down a snake on our behalf, the Amazon monsoon season let loose.

Still, I have not considered giving up.

Caesar A. Cruz
Fresno, CA

To the Editors: In your quest for locating the longest snake in the world, you should refer to Bernard Heuvelmans's book *On the Track of Unknown Animals*. Here you will find documented references to snakes of 58 feet, of between 72 and 75 feet, and of 115 feet in length.

Myron S. Hoyt
Phillips, ME

Have you seen or heard about the longest snake in the United States or the world? If so, let us know about it. –Ed.

Please send your letters to: Editor, Science Digest, 888 Seventh Ave., NY, NY 10106.

Illustration by Kimble Mead